IENCE
SH
1
A5

UNIVERSITY
OF MICHIGAN
APR 11 1957
SCIENCE
LIBRARY

SH
1
.A5
Index

INDEX

Transactions

of

The American Fisheries Society

1929-1952

Volumes 59-82

INDEX

Transactions
of
The American Fisheries Society

1929-1952
Volumes 59-82

Compiled by
William C. Beckman

Published by the Society
Ann Arbor, Michigan
1955

INDEX TO THE TRANSACTIONS OF THE AMERICAN FISHERIES SOCIETY

1929-1952
Volumes 59-82

The Index, following the style of the first Index which covered the first 58 volumes of the Transactions, is in two parts: Part I, Subject Index; Part II, Author Index. The subject index includes a listing of all scientific names occuring in the volumes with the page reference but not the topic covered by the references. All topical references are found under the common name for the species. However, only the major invertebrates are listed by common name and topic. References to the others will be found under the scientific name.

The nomenclature for the fishes is that given in the "List of Common and cientific Names of the Fishes of the United States and Canada," Special Publication Number 1 of the Society. Some of the more recent taxonomical names are included.

Copyright, 1955
AMERICAN FISHERIES SOCIETY

Printed by
THE CRAFT PRESS

PART I. SUBJECT INDEX

Abalone,
in hatchery food, 65 :305
in Mexican waters, 67 :258, 74 :79
Abothrium, 81 :97
crassum, 66 :349, 70 :170
Abramis brama, 62 :309, 314 ; 64 :368
Absorption, salt, 74 :297
Abundance,
analysis of, 76 :291
atlantic salmon, decline, 74 :191
bottom organisms, 72 :56
brown trout, 75 :148
causes of fluctuation, 70 :206
fish in streams, 59 :252
fluctuation, 70 :193
game and coarse fish, 70 :386
gar, short-nosed, 59 :156
kiyi, 74 :143
lake trout, 76:135, 143; 80:296, 299, 305
longjaw cisco, 76 :219
menhaden, 79 :141
midge larvae, 59 :156
Reighard's chub, 72 :111
sauger, 79 :35
T.V.A. reservoirs, fishing in, 73:146
yellow bass, 82 :91
yellow perch, 70 :103
yellow pikeperch, in Lakes Huron and Michigan, in relation to stocking 66 :143
Academic requirements, fishery biologists, 70 :128
Acalyptratae, 67 :216
Acanthocephala, 61 :211 ; 63 :223 ; 70 : 165 ; 71 :287 ; 81 :96
Acantholeberis curvirostris, 65 :108
Acarina, 62 :308 ; 66 :183 ; 76 :112
Acclimation, brook trout, 70 :307
Acer negundo, 75 :127
Acetic acid, control of disease in hatcheries, 62 :114 ; 63 :247 ; 65 :92 ; 67 :230 ; 69 :96
Acetone, solvent in trout diet, 60 :140
Achtheres micropteri, 63 :223 ; 68 :265
Acidity, ammunition plant wastes, 73: 46
Acid phosphate, in daphnia culture, 64 : 135, 207
Acilius, 76:113
Acipenser fulvescens, 60 :225 ; 69 :65 ; 71 :203 ; 77 :13 ; 79 :22 ; 80 :31, 37
guldenstadti, 60 :227 ; 62 :314
ruthenus, 64 :368
sturio, 80 :175
Acolpenteron ureterocoetes, 75 :105
Acorus, 59 :177
Acrididae, 66 :197
Acriflavine, treatment of bacterial disease of trout, 62:152
neutral, 73 :36
disinfectant, 74 :33
Acroneuria, 68 :271 ; 69 :153 ; 70 :317 ; 75 :54 ; 80 :104
internata, 75:53
lycorias, 70:243; 75:120
pacifica, 80 :102, 105 ; 81 :252
Acroperus, 61 :211
Actinastrum hantzschii, 66 :119
Actinobdella triannulata, 70 :163
Actinonaias carinata, 66 :406
Administratiuon, fisheries, 71 :27, 315
Aedes aegypti, 75 :52
Aeolothrips fasciatus, 65 :64
Aeromonas, 82:138
Aerosal, 73 :36
Aeschna, 59 :259 ; 60 :65 ; 69 :252
umbrosa, 76:109
Aeschnidae, 76 :111, 113
Agamonema, 70 :164, 166. 167, 168, 170
Agapetus, 70 :243
Agar, Difco nutrient, 73 :35
Age composition, poisoned fish, 75 :207
stratified sampling for, 79 :205
whitefish catch, 77 :200
Age, correlation, egg production, 71 :195 ; 75 :73
Age, criteria for assessment, 79 :45
Age determination, from bony structures, 80 :120 ; 81 :138
otoliths, 80 :163
pectoral spines, 80 :120, 174
vertebrae, 80 :119, 81 :249, 253, 255
scale study method, 70 :98
Age distribution, use of data, 77:114
Age, diversity of terms, 75 :163
Age, and growth (see also Growth)
alewife, 64 :119
atlantic salmon, 66:211; 67:184, 197
bass, largemmouth, 72 :180 ; 80 :200 ; 82 :249
bass, smallmouth, 80 :200
bass, spotted, 80 :200 ; 82 :197, 249
bass, white, 82 :249
bloater, 74 :89
bluegill, 72 :180 ; 80 :200 ; 82 :249
burbot, 80 :163
carp, 81 :138 ; 82 :249
catfish, channel, 80 :119, 174
chub, creek, 82 :198
chub, lake, 78 :21
chub, Reighard's, 72 :108
chubsucker, creek, 82 :199
cisco, 67 :235 ; 79 :181, 183
cisco, longjaw, 76 :215
crappie, white, 80 :2, 9, 200 ; 82 :249
croaker, 70 :478
drum, freshwater, 82 :249
kiyi, 74 :92
lawyer or ling, 70 :77
perch, yellow, 70 :102 ; 79 :36 ; 80 :200
pike, northern, 62 :327
pikeperches, Lake Erie, 63 :351
pumpkinseed, 72 :180
redhorse, golden, 82:200
sauger, 79 :32
sculpin, Utah, 81 :249, 253
shad, gizzard, 82:249
sheepshead, 79 :43
smelt, 72 :257 ; 78 :179
stoneroller, 82 :198
sunfish, green, 82 :196
sunfish, longear, 82 :196
sucker, longnose, 78 :20, 24 ; 80 :93
sucker, western white, 80:93:82:201
trout, in Virginia stream, 66 :196
trout, in streams, 68 :281
trout, in Upper Angora Lake, 71 :264
trout, hybrid, 80 :251, 254, 258
trout, 80 :251
trout, brook, 64:74; 70:225, 230; 72:44; 78:20; 80:255
trout, brown, 73 :209 ; 80 :93, 255 ; 81 : 171

trout, cutthroat, 80:251, 255, 258; 81:235, 240
trout, lake, 78:19; 81:111, 129; 82:184
trout, rainbow, 63:254; 70:215; 75:77; 78:18; 80:93, 251, 254
tullibee, 73:125
whitefish, 62:311; 68:152; 71:119; 77:206
whitefish, rocky mountain, 78:17
walleye, 73:90; 80:200; 81:189, 191; 82:35
Agriculture, Dept. of, 70:73
Agriculture, education for, 70:129
Agricultural Extension Service, 71:340
Agrion, 79:59
Aguja, 74:77
Air transport of fish, 73:21
Alabama, legislation, 59:25; 62:29; 63:35; 64:97; 65:39; 70:28
fluctuation of water levels, mosquito control, 61:28
nest destruction, 62:28
Lake Wilson, reservoir fishery problem, 66:64
shrimp catch, 62:108
Alabama Polytechnic Institute, 70:138
Alaska, fishery management, 71:329
fishery problems, 71:68
blackfly control, 77:160
Alasmidonta marginata, 64:446
Albacore, 74:72; 80:111; 82:321
in Mexican waters, 67:257
Alberta, fishing industry, 60:215
planting of fry, 60:116
Albula vulpes, 74:77, 267
Alcohol, solvent in trout diet, 60:140
Alcyptratae, 65:66
Alderfly, 60:73; 65:130; 66:375; 71:255; 72:56; 73:200
Alewife, food of lake trout, 67:156
food of ling, 60:199; 80:57
food of other fishes, 64:123
in hatchery diet, 64:157; 65:381; 70:299
Lake Ontario, 74:234
life history, 64:118
movement in Chesapeake Bay, 67:80
nutritive value, 64:436
potential yields, 71:65
production, 73:395
restoration of fishery, 73:394
Alfalfa, in trout diet, 60:132
in daphnia culture, 64:207
Algae, associations in lakes, 59:174
bluegreen effect of pollution on, 60:316
in Hocking River, 61:204
in Lake Erie, 63:276
cause of mortalities, 64:416; 71:115; 75:175
Cyanophyceae, 81:222
control of, problem, 59:184
in circular ponds, 63:141
with copper sulfate, 65:102
effect of copper sulfate on, 65:118; 69:145
effect of fertilizer on, 71:94; 72:100
effect on oxygen, 62:282
effect of rotenone on, 69:153
food of fishes, 59:174, 178; 74:254
bass, largemouth, 66:253
bluegill, 69:246
bullhead, 80:52
carp, 80:52
dace, blacknose, 64:73
mosquito fish, 61:211
redhorse, 60:254
shiner, sand, 67:223
sucker, 59:260; 60:254
trout, 60:64
brook trout, 65:127
rainbow trout, 63:255; 64:342; 65:126; 66:197; 76:305, 312
food of *Daphnia*, 66:288
mayfly larvae, 63:178
Green, Lake Erie, 63:276
in Hocking River, 61:204
effect of pollution on, 60:316
in bass hatchery, 69:123
lethal dosage of arsenic, 61:231
marine, arsenic in, 61:157
menace in smallmouth bass ponds, 66:271
in Minnesota ponds, 66:114
pond growth of, 73:59
numbers in fertilized pond, 59:97
in Hawaiian fish ponds, 74:250
in Quebec, 64:465
red, in Quebec, 64:466
significance in fish ponds, 59:182
Algonquin Park, 70:236; 78:133; 82:203
laboratory, 70:140
lakes, 70:391
parasites of fish, 70:161
smallmouth bass, 70:172
trout, lake, fishery, 75:19
Alisma, 59:177
Alkalinity, hatchery waters, 59:196
Holston River, 73:204
Lake Erie, 63:273
methyl-orange, New York Lakes, 64:191
methyl-orange, Tennessee streams, 74:224
Minnesota ponds, 66:109
Ontario waters, 60:41
ponds, 73:257, 377
Upper Mississippi Wildlife and Fish Refuge, 61:143
relation to productivity, 76:324
southwest streams, 67:250
and conductivity, in artificially circulated lakes, 82:231
and phosphorus in lakes, 82:78
Alligator weed, 73:282
Allocapnia torontoensis, 71:221; 72:37
Allocreadium, 59:200
ictaluri, 70:166
lobatum, 60:85; 70:164
Alloglossidium corti, 68:265; 70:166
geminus, 70:166
Alloperla imbicilla, 70:243
Almeja, 74:77
Almis incana, 72:37
Alona, 60:191; 61:211; 63:379; 67:218, 221
affinis 65:65
costata, 63:379
guttata, 63:379; 65:64
quadrangularis, 65:63, 64, 65, 67; 67:218
Alonella, 59:99; 65:64
nana, 65:108
Alosa africana, 67:56
Alabamae, 67:56
sapidissima, 67:52, 80; 68:364; 69:241; 71:144; 73:188, 364; 75:264; 78:40; 81:78
Aluminum, in Minnesota Pond, 66:110
Aluminum oxide, in ponds, 73:379
Amansia glomerata, 59:180
Amaranthus, 75:127
Amargosa pupfish, 73:190
Amblema costata, 64:446; 66:406
Ambrosia artemisiifolia, 75:127
trifida, 75:127
Ambloplites rupestris, 59:110; 60:233, 256; 62:332; 65:210; 66:317, 357;

67:271; 68:211, 258, 331, 356; 70: 82, 143, 385, 387, 422; 71:131, 272; 72:72; 73:39, 76, 87, 373; 75:140, 205, 219, 224, 237, 241, 252; 76:64, 75, 166, 304; 77:57, 121, 226; 78:82, 171; 80:37, 65, 69, 198; 81:10; 82: 35, 160
Amblystegium riparium, 65:141
Ameiuridae, 75:314; 76:111
Ameiurus, 59:110; 60:215; 63:71; 68: 285, 356; 70:385, 387; 72:208, 270; 73:76, 87, 147; 75:112; 77:22, 60; 80:120; 82:251
melas, 63:27, 215, 321; 64:446; 65:63; 66:317, 357; 68:258; 71:206; 73:183; 75:88, 91, 116, 175; 76:27, 32, 208; 77:39; 78:39, 146; 79:123; 80:50, 90, 175, 235; 82:106, 160, 198, 256
natalis, 64:446; 65:212; 68:132; 69:102; 70:195, 203; 71:103, 206; 72:178; 73: 364; 74:360; 75:205, 222; 76:27, 32; 77:59; 78:39, 67, 89; 80:219, 235; 81:10; 82:53, 160, 197
nebulosus, 60:232, 255, 270; 61:77, 183; 62:165, 332, 341; 64:71, 319, 374; 65:109, 212, 298; 67:181, 242; 69:205, 220, 241; 70:166, 195, 203, 352, 393, 422; 71:206; 73:183, 364; 75:56; 76:27, 32, 304; 77:15, 144; 78:39, 66, 89; 79:20, 127, 147; 81: 10, 115; 82:15, 53, 160
Ameletus, 65:66; 75:120; 80:104
American Fisheries Society, place in fisheries, 62:351
American Fish Policy, need for, 63:73
American Fish Policy, committee report, 64:25; 65:27; 66:29; 68:39
American Fish Policy, 71:28, 297, 315-331
Amia calva, 59:110; 60:253; 64:179, 296; 71:203, 206; 72:187; 73:39, 76, 87, 147; 76:27, 166; 78:39, 165; 81:10; 82:15, 53, 245
Amiidae, 60:217
Amino acids, in crab meat, 65:343
Ammocrypta clara, 75:133
Ammodytes americanus, 64:157
Ammonia, Lake Erie, 63:273
ponds, 74:340
pond fertilizer, 68:126
Ammonium sulphate, 69:96, 258; 70:336; 73:388; 74:342
Ammophos, 70:365
Ammunition plant wastes, 73:45
Amnicola, 59:175; 60:219; 68:162; 72: 278, 283; 75:127, 171; 76:308; 80:61
limosa, 80:65
Amnicolidae, 82:204, 205, 206, 208, 209
Amoeba proteus, 64:447
Amphiagrion saucium, 76:310
Amphibia, 60:67; 65:131; 70:315, 317, 326; 80:79
Amphiodon alosoides, 71:203; 73:147; 77: 13, 86; 79:22, 169; 81:181
Amphiodus, 60:66
Amphipoda, 60:65, 191, 235; 63:379, 382, 389; 65:63, 64, 65, 66, 67, 131; 66: 183; 67:216, 217, 220; 68:190; 69: 195, 207; 70:359; 72:278; 73:232, 233
Amphipod, in coastal lagoon, 69:180
effect of rotenone on, 69:153
host of tapeworm, 66:364
planted as food, 60:87
trout feeding experiment, 65:300
food of bullhead, 60:232
burbot, 80:57
perch, yellow, 60:230
pickerel, 60:228
tullibee, 60:222
sauger, 60:229
smelt, 66:139
sucker, 60:231
whitefish, 60:219
Amphora, 74:254, 272; 82:22
ovalis, 66:119
Amyda ferax, 71:187
Anabaena, 60:255; 64:182, 423; 65:102, 118; 66:115; 70:350; 75:168, 172, 76:350
Anabaena spiroides, 62:281
Anabas, 78:94
Anabiosis of fishes, 62:340
Anacharis, 73:379; 75:49; 76:345; 79:150
canadensis, 76:303
Anaesthesia, carbon dioxide, 72:25
cresol, 70:273
ether, 70:272, 72:26
urethane, 65:339
Anallocreadium, 68:265
Anatomy, genital, brown trout, 77:75
Anax junius, 64:138; 66:255, 268; 69: 250, 254; 76:109, 112
Anchoa mitchelli, 79:141
Anchor tag, 71:228; 73:324, 334
Anchovia brownii, 64:157; 66:225
mitchilli, 64:157
Anchovicella mitchilli, 67:81; 68:366
purpurea, 74:265, 270
Anchovy, in hatchery diet, 64:157
Hawaiian, 74:265, 270
food of menhaden, 79:141
striped bass, 66:225; 67:81; 68:366
Ancylidae, 82:15
Ancylus, 61:204; 70:321
Ancyrocephalus, 61:202; 64:138; 66:272
Anemia of trout, 74:81, 212
Angling, Division of, report, 60:16; 61: 22; 63:40; 64:39; 65:40; 66:37; 67:30; 69:36; 71:29; 77:297; 79: 250
Angling, commercial fishing vs., 60:18; 70:70
for black crappie, 66:311
for bluegill, 66:312
catch in California, 69:125
catch in small Michigan Lakes, 67:125
catch in New York Lakes, 67:132
in Chesapeake Bay, 62:47
effect of dams, 71:305
effect of moon on, 67:212
effect of mortality on 63:238
effect of weather, 66:327
experiment, trout, 74:63
grayling in Manitoba, 62:379
improvement, 78:13
largemouth bass, 66:311
license sales, 63:41
management of waters, 70:18
marine sport, California, 69:111
Maryland, 66:403
methods of, Michigan, 66:88
municipal reservoirs, 71:313
pike, 66:311
rainbow trout, 64:342; 70:417
relation to water level, 75:258
reserve for children, 71:321
restoration of, 72:189
results, 72:177
Spring Creek project, Pennsylvania, 68: 359
statistics, 72:207
success of men and women, 66:329
summer, Michigan, 65:209
Anguilla rostrata, 65:109, 298; 67:181; 69:143; 70:167, 352, 394; 72:208;

75:116, 167, 175; 77:60; 80:115
Animal associations in lakes, 59:174
Anisoptera, 60:192; 69:195; 70:320, 352; 71:170; 72:56, 278, 283; 73:200, 246; 76:109, 111; 82:15
Ankistrodesmus, 66:288; 68:128; 73:392; 82:22
falcatus, 66:114
Annelid, marine, oxygen consumption, 63:211
Annelida, 71:170; 73:233; 80:102, 105 81:245
Anidonta, 75:116
Anomalagrion, 65:66
hastatum, 79:149
Annulus formation, 63:377; 66:227; 75: 80; 80:173; 81:242
Anthomyidae, 80:79
Anti-anemia factor, 73:67
Antibiotics, effects on *Bacterium salmonicida*, 82:135
Antocha, 66:375; 75:121
Ants, food of, largemouth bass, 66:253
bluegill, 69:246
dace, horned, 64:73
grayling, 68:190; 69:246
mooneye, 67:216
shiner, sand, 67:223
shiner, mimic, 67:222
trout, brook, 60:73; 63:190; 64:73
brown, 71:109, 256
cutthroat, 63:199
lake, 67:167
rainbow, 63:255; 66:197
Anuraca, 59:100, 175, 176; 61:211
cochlearis, 65:108
Aphanocapsa, 70:350
Aphanizomenon, 59: 97; 60:254; 62:281; 65:118; 82:106
flos-aquae, 64:416; 75:179; 77:14
Aphanothece, 71:176
clathrata, 65:106
Aphididae, 60:66; 63:388; 65:62, 64, 66; 67:216, 223; 69:251, 253; 76:109, 112
Aphids, food of grayling, 68:190
Aphodius, 68:191; 69:248
Aphredoderus sayanus, 82:202, 256
Aphylla williamsoni, 79:149
Aplodinotus grunniens, 60:233; 63:320, 389; 70:358, 469; 71:203; 73:39, 147; 75:306; 77:180; 79:22, 43, 123; 80:31, 37, 64; 82:104, 214, 245
Apparatus, fry collecting, Connecticut, 61:114
fry and fingerling counter, 64:270
capturing aquatic insects, 70:237
scale projector, 70:98
trout hatchery, 70:430
Applications for fish, review of, 71:343
Appropriations, recommended Federal Construction, 71:309
Aquarium studies, brown trout, 75:59
Aquatic Biology and Physics, Division of, report, 59:22; 61:26; 63:23; 65:36; 66:34; 68:24; 69:28; 71:23; 78: 214; 79:248
Aquatic biology, definition, 71:23
Aquatic organisms, effect of pollution on, 63:70
effect of rotenone on, 69:153
effect of waste on, 79:55
in Quebec lakes, 62:198
Aquatic plants, control, 76:183; 77:296
effect of copper sulfate on, 65:107; 69: 145
Fish Lake, Utah, 65:124
food of fishes, 59:174
interrelationship between sunlight and fishes, 62:278
role in fisheries management, 67:116
Aquatic-worms, food of trout, cutthroat, 63:199
trout, 71:220
production in trout stream, 68:232
Arachnida, 60:191; 65:64, 66, 131, 153; 66:253; 67:219; 71:109; 72:141; 82:216
Arachnoidea, 81:245
Araneae, 63:255; 66:197; 68:190; 69:246; 254; 81:245
Araneida, 67:219
Arcella, 66:123
Archer tag, 73:323
Archoplites interruptus, 69:220; 73:186
Arctocorisa, 74:268; 75:120, 128; 76:310, 312
Arcynopteryx, 80:104
Area, 78:94
occidentalis, 79:259
Argentina, stocking of salmonids in, 69: 279
Argia, 68:271; 69:153
Argulus, 82:29, 30, 215
canadensis, 67:91
flavescens, 68:265
stizostethi, 63:380; 65:68
versicolor, 69:269
Argyreiosus brevoorti, 74:76
oerstedii, 74:76
Aristeae, 73:290
Aristacus, 73:300
antennatus, 73:301
antillensis, 73:301
occidentalis, 73:301
semidentatus, 73:301
virilis, 73:301
Aristacomorpha, 73:300
foliacea, 73:301
rostidentata, 73:301
Arizona, legislation, 59:26; 64:97; 65:39
effect of drought on fish, 64:61
San Carlos reservoir, water supply, 66:69
Arius, 78:94
Arkansas, legislation, 59:26; 61:83; effect of drought on fish, 64:60 63:35; 64:97; 65:39
fertilization of ponds, 64:129
production, bass fingerlings, 64:130
Valley Authority, 71:29, 308
Aroma, of wild and hatchery brook trout, 75:183
Arrhenius formula, 64:287
Arrowhead, in Quebec, 65:466
Arsenic, effect on young fish, 60:270
content of bass fingerlings, 61:150
content in crab meat, 65:343
lethal dosage, algae, 61:231
damselfly larvae, 61:229
dragonfly larvae, 61:229
isopods, 61:230
mayfly larvae, 61:229
midgefly larvae, 61:229
shrimp, freshwater, 61:230
watermites, 61:230
method of application, 60:278
marine algae, 61:157
pollution in Connecticut, 61:160
quantity of fish needed to obtain lethal human dosage, 61:159
Arsenious oxide, 60:270
concentration needed to kill fish, 61:143
bottom fauna, 61:144
Artemesia longinaris, 73:308
Artemia, 63:105
elegans, 63:129
salina, 63:129

Arthritis deformans, 73:43
Artificial lakes, propogation, smallmouth bass, 72:233
production, 72:212
stocking and management, 72:204
Artificial nests, bass, 73:26
propogation results, 73:158
stocking, yellow pikeperch, 73:102
Artificial propogation, atlantic salmon, 74:188
efficiency, 74:199
creek chub, 75:336
Asellus, 60:191; 61:205; 63:136; 65:300; 66:374 69:207; 80:61, 65
communis, 61:230
Ash, content in fish meal, 61:65; 64:295 in trout, 68:316
Asplanchna, 66:124; 73:244; 82:22
Astacus, 82:148
Astenophylax, 60:81
Astocus, 82:149
Asterionella, 69:146; 75:168; 328; 77:84; 78:15, 135, 139
formosa, 65:107; 70:224
Atarrayas, 74:78
Atherinops affinis oregonia, 66:227
Atherix, 60:81; 70:321; 73:202; 76:257; 80:102, 105
Athripsodes augustus, 70:243
dilutus, 70:243
Atkins tag, 73:323, 330
Atlantic Marine Fishery Compact, 71:27, 323, 330
Atmospheric pressure, effect on fisheries, 64:384
Atun, 74:72
Atypopenaeus, 73:311
compressipes, 73:312
Atymna querei, 75:120
Auditing committee, see Committees
Audouinia semi-cinctus, 74:274
Availability, phosphorus, 76:348
differential, 80:46
Azygia angusticauda, 69:268; 70:167, 168, 170
longa, 70:167
Azochloramid, 73:36
Azotobacter, 76:349

B

Bacalao, 74:73
Bachelor-button tag, 73:323
Bacillariaceae, 59:175; 82:22; 25, 27, 28
Bacillus, 75:187
coli, 74:445
columnaris, 61:194; 73:32
prodigiosus, 60:269
Backswimmers, eliminated in hatchery pond, 64:136
food of grayling, 68:191
predator in bass hatchery, 69:122
predator on smallmouth bass, 66:267
predator on pikeperch, 73:259
Bacteria, action in fertilization, 65:184
airbladder disease, lake trout, 66:359
cultural test for furunculosis, 61:197; 82:131
description, furunculosis, 75:186; 82:129
ingested by clam, 60:269
iron, in Minnesota pond, 66:119
in sewage effluent, 64:445
significance in freshness of haddock, 64:401
ulcer disease, 70:379; 78:58
Bacterial disease, in trout, 65:79; 85, 74:81
wild fish, 74:22
Bacterial gill disease, control, trout, 63:143, 161; 74:81
bass, 72:234
Bacterium, 82:138
coli, 71:314
cyprinicida, 66:359
salmonicida, 61:193; 65:90; 74:23, 26; 75:186, 194, 198; 76:83, 89, 77:93, 100; 78:56, 59, 117, 119, 124, 182, 186; 80:240, 249; 81:101; 82: 129
truttae, 75:187
Baetidae, 69:250; 80:102, 105
Baetinae, 63:385; 65:66, 67; 70:314; 73:202; 76:109, 310
Baetis, 60:65, 81; 63:186, 252; 65:300; 66:197, 253; 68:330; 69:248, 253; 70:314; 75:53; 80:101, 104
brunneicolor, 72:36
cingulatis, 70:243
flavistriga, 70:243, 245
parvus, 70:243
pluto, 70:243
pygmaeus, 70:243
vagans, 71:220
Baetisca, 75:120
laurentina, 70:243
Bag limits, results of removal, 78:64
Bagre, in Mexican waters, 74:76
Bagre marina, 79:139, 141
Bait, artificial, 80:47
for bluegill, 70:199
for bullhead, 70:203
natural, 80:47
propogation of, 71:326
types of, 67:134
Balto, hatchery diet, 62:128; 67:269
Balaenoptera musculus, 67:257
sibbaldii, 67:257
Bangos, in Philippine waters, 79:262
Bankfishes, tagging of, 73:321
Banksiola selina, 76:310
Barb tag, 73:323, 331
Barkley Bill, antipollution, 67:24; 68:37; 70:29, 37, 48; 71:42
Barr fishway, 71:317
Barracuda, in Mexican waters, 67:258; 74:74
Hawaiian, 74:267
sport fishery, 63:335; 69:117
Barriers, natural, limiting distribution, 80:114
Barrilete, in Mexican waters, 67:258; 74:72
Basic slag, in ponds, 69:258
Bass, black, catch, 66:90; 80:20, 47; 82:251
commercial fishing, 62:263
conversion between standard and total length, 75:238
cost of, N. J., 62:168
culture, New Jersey, 62:167
Ontario, 60:46
U. S., 61:20
depth distribution, 75:65
diseases, 59:218; 61:201; 63:29; 66:364; 68:263; 72:197; 75:105
egg production, 71:350
floating nest, Lake Herrington, Ky., 63:62
food of golden shiner, 61:85, 99
merganser, 66:336
growth in fertilized pond, 63:106
harvest rate, 80:21
killed by salt water, 64:83
legislation, 59:25; 62:27, 363; 63:35, 98; 64:97
length-weight equation, 75:241
relationship, 75:250

management, 71:339; 78:39
panfish lakes, 78:163
pollution, effect of, 63:71; 82:163
predation on trout, 64:318
production, ponds, 59:113; 62:158; 64:149; 66:116; 71:349, 365
social behavior in rearing ponds, 64:146
spawning season, 62:161; 64:132
species of, 61:86
standard for computing production, 64:163
stocking, in New Jersey, 71:356
ratio, 77:141
reservoirs, 68:221
trout streams, 65:319
year-classes, 75:224
yield at various stocking ratios, 77:144
Bass, channel, in Texas waters, 79:143
Bass, largemouth, angling for, 66:311
cannibalism, 66:242
catch, 66:325; 67:134; 68:356; 72:204, 214; 73:39; 76:83, 232; 78:163; 80:12, 53; 82:36, 109, 251
capture in seines, 70:384, 387
change in name, 82:327
coefficient of condition, 75:250
D.D.T., effect on, 75:50; 76:316, 320
culture, 59:86; 60:48; 61:83, 106, 116; 62:156; 64:127; 73:373
disease of, 59:199; 63:220; 68:173, 265; 80:146
effect of arsenic on, 60:270
effect of fertilizer on, 63:110; 71:97
effect of oxygen on, 61:218
effect of pollution, 82:160
effect of pressure, 61:219
killed by rotenone, 70:82; 72:270;82:173
effect of tag on, 63:323
effect of temperature on, 62:202; 70:335
electric seining, 77:57
fingerling trap, 59:118
fingerling, arsenic content, 61:150
oxygen consumption, 63:208
food of young, 59:184
food of, 60:163, 256; 63:136, 164, 379; 65:59; 66:242; 69:257; 70:198; 71:175
food conversion, 81:154
food of northern pike, 66:373
food of trout, 59:150; 76:301, 304, 309
fry, trap, 59:118
growth, 59:210; 66:242; 70:196; 72:68; 76:65, 78; 78:90; 79:133, 191; 82:255
growing season, 70:183
in Florida lakes, 71:184; 82:15
in Louisiana, 61:95
in Manitoba, 79:21
in Maryland, 66:403
in Missouri, 61:119; 82:245
in Nevada, 73:185; 80:86, 91
in Oregon, 69:241
in Pyramid Lake, 69:220
in terrace-water ponds, 69:102
in Texas, 82:215
in Wisconsin, 82:34
killed by lack of oxygen, 64:374
length-weight relationship, 75:237
management, 71:103, 347, 357; 72:204; 73:274; 76:178; 78:65; 80:197, 231
metabolism of, 63:215
mortality, winter, 76:27
mortality rate, estimate, 82:64
population control, 75:140
population estimate, 71:203; 72:178, 189; 75:205; 77:39; 78:163; 79:32; 81:4; 82:48, 61
predation on Cuban fish, 66:367
production of, 63:164; 66:79; 71:166; 72:220; 73:250, 262; 79:125
pond experiments, 75:84; 76:46; 79:122; 80:210
range of pH tolerance, 61:217
scarcity in slough, 59:111
sex ratio, 76:78
size and age composition, 75:216
spawning period, 59:215
species, 61:86
standing crop, 82:62
stocking, 71:347, 350, 357
stocking rate, 80:218
survival, 72:63
tagging, 63:326; 74:360; 79:155; 81:4
Bass, redeye, name change, 82:327
Bass, rock absorption of oxygen, 67:271
catch, 65:211; 66:90, 325; 67:134; 68:356; 72:214; 73:39; 78:67; 80:54; 82:35
coefficient of condition, 75:252
conversion between standard and total length, 75:238
depth distribution, 62:332
diseases of, 61:201; 66:358
diurnal activity, 68:211
effect of pollution on, 82:160
electric seining, 77:57
food of, 60:256
food of northern pike, 80:69, 80
growth, 71:131; 72:72; 75:219; 76:64, 74; 77:226; 78:82, 157
length-weight relationship, 75:252
length-weight equation, 75:241
in Mexican waters, 74:75
in smallmouth bass stream, 68:331
in Sacondaga reservoir, N. Y., 61:140
in Prairie Provinces, 60:233
management, 71:346, 348, 357; 80:80, 198
mortality rate, 77:114, 119, 121
mortality Niagara River, 68:247
population control, 75:140
population estimate, 75:205; 78:165; 80:37; 81:8
production, 61:83, 116; 63:398; 73:373
sex ratio, 76:74
size and age composition, 75:219
tagging, 63:326; 66:318; 68:258
trapped, 63:76; 76:166
total vs standard length, 70:272
Bass, rock, marine, sport fishing, 69:117
Bass, sea, potential yields, 71:66
Bass, smallmouth, absorption of oxygen, 67:271
availability, 70:172
capture in seines, 70:383, 387
catch, 65:211; 66:325; 67:134; 68:356; 72:214; 82:34,251
change in name, 82:327
coefficient of condition, 75:248
comparison of streams, 68:322
conversion between standard and total length, 75:238
culture, 59:86; 60:36; 61:80, 83, 106, 116; 62:156, 226; 63:391; 65:309; 69:119; 73:373; 79:105
depth distribution, 62:332
D.D.T. treatment, 75:55; 76:315
diseases of, 63:224; 66:352; 69:169; 70:168; 80:146
effect of arsenic on, 60:270
effect of oxygen concentration on, 61:218
effect of pollution on, 82:160
effect of pressure, 61:221
effect of rotenone on, 69:149; 70:353
effect of temperature, 73:23; 75:43
effect of vacuum on 70:469

electric seining, 70:406; 77:57
experimental introduction, 73:19
failure in lake water, 61:118
feeding habits, 70:311
fingerling, predation on, 66:267
fishing for, 61:140
fluctuation in, 70:195
food of fry and fingerlings, 68:330
food of minnows, 65:142
growth, 60:39; 65:310; 67:101; 72:77; 75:306; 76:65, 80
growing season, 70:183
life span, 73:23
in Canadian marshes, 70:422
in fertilized pond, 68:132
in Great Smoky Mountain Nat'l Park, 68:87
in Iowa, 75:116
in Louisiana, 59:207
in Manitoba, 79:24
in Maryland, 66:403
in Missouri, 61:120
in Nevada, 73:184; 80:88
in Oregon, 69:241
length-weight equation, 75:241
length-weight relationship, 75:248
management, 71:244, 246, 251, 270; 80:197
natural rearing enclosures, 67:96
population study, 62:189; 75:140; 81:4
productivity, 60:51; 66:79; 73:377; 74:338
sex ratio, 76:80
size to density relationship, 70:172
spawning, 60:53, 62; 73:31
species, 61:86
survival, 64:147
tagging, 62:380; 63:326; 66:318; 67:211; 68:258
trapped, 73:80; 81:290
Bass, spotted, cannibalism less, 61:84
catch, 72:214; 73:39; 80:4, 15; 82:245
change of name, 82:327
description, 61:86, 91
diseases of, 63:321
ecology, 61:89
effect of pollution on, 82:160
eggs, number of, 61:92
fry, number per nest, 62:186
geographical range, 61:98
life history, 61:89
growing season, 70:184
growth, 82:255
in Louisiana, 61:95
management, 80:198
population, 71:203; 80:28; 82:193
propogation, 61:83, 93; 62:156, 185; 73:373
spawning, 61:92
tagging, 63:326
Bass, striped, capture in seine, 70:383, 387
characteristics of, 66:225
food of, 67:81; 66:225
in Chesapeake Bay, 62:47
in coastal lagoon, 69:180
in Maryland, 66:403
in Oregon, 69:241
in Virginia, 73:364
investigations, 69:32
migratory fish, 67:67
research on, 68:364
tagging, 61:207; 62:381; 67:68; 73:321
potential yields, 71:66
Bass, warmouth, catch, 72:216; 73:39; 80:31; 82:247
diseases of, 66:358; 68:265
food of spotted gar, 82:15
in Arkansas, 61:83
in Florida, 78:39
in Oregon, 69:241
in Minnesota lakes, weight of, 78:165
in ponds, 79:122; 80:222; 82: 173
population estimate, 82:48, 61
Bass, white, catch, 72:216; 73:39; 79: 125, 127, 136; 82:106, 242
fluctuation in year classes, 75:308
food of, 63:380; 65:60; 80:60
growth, 75:306; 82:213
Lake Erie, 77:181, 197
in T. V. A. Lakes, 71:206
management, 77:39
population estimate, 80:31
tagging, 63:326
potential yield, 71:69
Bass, yellow, abundance, 82:91
catch, 73:39; 80:6, 9
coefficient of condition, 82:101
growth, 82:91, 94
length-weight relationship, 82:101
in TVA lakes, 71:206
in Tennessee, 68:244
propogation, 61:83
Baths, salt, 74:297
Bathymetric distribution, chubs, 72:108; 74:147
Batis maritima, 74:254, 265
Batrachium trichophylum, 64:464
Batrachospernum, 64:443, 466
Baya, in Mexican waters, 74:75
Bean meal, in trout diet, 62:128
Beaver dam, effect on trout stream, 70:236
Beaver-trout management, 65:223
Beef heart, hatchery food, 64:136
Beef liver, hatchery food, 62:127, 233; 65:161; 73:66
nutritive value, 64:436
Beef lungs, hatchery food, 62:127
Beef melts, hatchery food, 60:147; 62:127; 63:167
Bees, food of brook trout, 60:73; 63:190; 71:256
brown trout, 71:109
cutthroat trout, 63:200
Beetles, food of, Atlantic Salmon, 65:153
bluegill, 69:246
brook trout, 60:66, 73, 82; 63:189; 71:221
brown trout, 71:109; 73:219
bullhead, 64:74
cutthroat trout, 63:199
grayling, 68:190; 69:246
horned dace, 64:73
lake trout, 67:167
largemouth bass, 66:253
lawyer, 67:170
mooneye, 67:216
rainbow trout, 63:255; 64:342; 66:197
sculpins, 66:375
sand shiner, 67:223
smallmouth bass, 70:320
spotted shiner, 67:221
trout, 71:256
in bottom fauna, 66:183; 72:56; 73:200
Beetle, Tiger, predator on smallmouth bass fry, 69:122
Beetles, production in trout stream, 68:232
Beetle larvae, elimination from hatchery pond, 64:136
food of brook trout, 64:73
rainbow trout, 65:126
in bottom fauna, 60:187
predator on smallmouth bass, 66:267

Beggiotoa, 64:452; 65:106
Behavior, lamprey, sea, downstream movement, 81:283, 287, 289
nesting, sculpin, Utah, 81:258
Belostomatidae, 76:109, 112; 80:82
Belostoma, 59:112; 60:192; 68:191, 271
flumineum, 76:310
Benacus, 59:112; 76:113; 82:16, 19
griseus, 70:423
Bentheogennema, 73:290
borealis, 73:295
intermedia, 73:295
pasithea, 73:295
stephenseni, 75:295
Benthesicymae, 73:290
Benthesicymus, 73:291
altus, 73:298
barletti, 73:298
brasiliensis, 73:296, 297, 298
cartinatus, 73:297
cereus, 73:297, 299
crenatus, 73:296, 297
filipes, 73:291
investigatoris, 73:298
iridenscens, 73:300
stephenseni, 73:295
strabus, 73:296, 299
tanneri, 73:298
urinator, 73:299
Benthonectes, 73:290
Benthonic plants, 74:265
Benthos, 81:125
Bentzel velocity tubs, 72:36
Benzene hexachloride, effect on trout and salmon, 77:160, 163, 174
Berosus, 60:192; 66:253; 70:321; 76:111
peregrinus, 75:53
striatus, 75:120
Bias, scale measurements, 71:75
Bibio, 81:123
Bibionids, food of brook trout, 60:66
Bibionidae, 69:251; 81:120, 124
Bibiocephala, 80:102, 104
Bibliography on tagging, 73:352
Bicarbonate, in fertilized pond, 68:130
Bidens beckii, 64:443, 464
Bidessus, 68:191; 69:248
Bingham Oceanography Laboratory, 73:284
Biological balance law, 71:319
Biological Board of Canada, 60:172
Biological Survey, Bureau of, Consolidation, 70:70
Biologist, training and employment of, 81:320
Biology, panacea for some national problems, 62:368
Biotic interaction, fish ponds, 74:262
Biotin, requirement of trout, 77:152
Birds, marks left on fish, 63:230
Bithynis grandimanus, 74:267
Bittern, marks on fish, 63:231
Blackberry, food of rainbow trout, 64:342
Blackfin, Lake Michigan, 74:144
Blackfly control, 77:173
winter hatch, 81:210
Blackfly larvae, seasonal distribution, 64:243
food of brook trout, 64:340
cutthroat trout, 63:199
rainbow trout, 81:213
salmonids, 77:168, 172
sculpins, 66:375
Bladderwort, in Quebec, 64:464
Blasturus, 60:65, 81; 69:247; 70:243; 79:59; 80:73
cuspidus, 69:248, 251, 252
Blindness, white, brook trout, 80:140
green sunfish, 80:147
largemouth bass 80:146
longear sunfish 80:146
orangespot sunfish, 80:146
smallmouth bass, 80:146
yellow perch, 80:146
Bloater, food of lake trout, 67:156
Lake Michigan, 74:144; 76:237
Lake Ontario, 74:230
Blood count, chinook salmon, 73:66
fishes, 80:184
silver salmon, 80:184
Blood, development of glochidia in, 59:221
Blood salt, 74:297
Blood, study in fish diseases, 59:197
Blood suckers, effect on fish population, 64:363
Bloodworm, bait for rock in Maryland, 66:404
effect of copper sulphate on, 69:145
food of bluegill, 69:246
brown bullhead, 69:206
largemouth bass, 63:136
in bass hatchery, 69:122
Bluefish, in Chesapeake bay, 62:47
in Maryland, 66:403
in Texas waters, 79:139
nutritive value, 64:436
potential yield, 71:66
Bluegill, angling for, 66:312
catch, 65:211; 66:90, 325; 67:134; 68:356; 70:385; 72:214; 73:39, 77; 78:65; 79:11; 80:232; 82:109, 242
cannibalism, 77:142
coefficient of condition, 75:242
conversion between standard and total length, 75:238
D.D.T., treatment, 65:50; 76:317
depth distribution, 81:162
effect of arsenic on, 60:270
effect of CO_2 on, 67:272
effect of eating D.D.T. sprayed food, 77:173
effect of fertilizer on, 69:257; 71:96; 78:146
effect of oxygen concentration on, 61:218
effect of pollution on, 82:160
effect of pressure on, 61:219
effect of rotenone on, 68:271; 72:270; 82:173
effect of tag on, 63:323
effect of vacuum, 70:470
electric seining, 77:57
food of, 60:163; 65:59; 69:244; 71:175; 73:231
food of bass, 80:156
crappie, 63:61
northern pike, 66:373; 80:69
spotted gar, 82:13
forage fish, 76:48, 50, 54, 58
growth of, 70:335; 75:209; 76:65, 68; 77:227; 78:86; 79:134; 82:263
hybrids, 75:84, 211; 79:112
killed by salt water, 64:84
killed by lack of oxygen, 64:374
in Canada, 64:368
in Florida, 78:39
in Nevada, 73:186; 80:91
in Oregon, 69:241
in ponds, 69:257
in terrace-water ponds, 69:102
in Texas waters, 82:214
length-weight equation, 75:240
length-weight relationship, 75:242
management, 71:103, 254; 73:274; 76:178; 80:254
mortality, 71:112; 75:175; 76:27; 82:63
oxygen threshold, 76:32

parasites of, 64:179; 66:358; 68:266
pond experiments, 76:46
population estimates, 68:285; 71:203; 75:140, 205; 78:165; 80:28; 81:4; 82:48, 58, 195, 255
propogation, 61:83, 106, 116; 73:373
production, 66:79; 68:131, 309; 71:166, 358; 79:125
range of pH tolerance, 61:216
sex ratio, 76:68
size and age composition, 75:207
standing crop, 82:62
stocking policy, 71:346, 349, 356
stocking ratio, 76:57; 77:141; 80:218
survival and growth, 76:190
tagging, 61:207; 63:326; 74:360; 75:36; 79:157
test animal, 75:234
toxicity threshold, 78:104
year classes, comparative strength, 75:224
yield at various stocking ratios, 77:144; 80:210, 218
Bluepike, Lake Erie, 59:79
in trap nets, 62:103
Boats, fishing, on Great Lakes, 63:32
B.O.D., 73:46; 77:264
Bodo, 64:447
necator, 70:441
Body cavity tag, 73:323, 331
Body—length—spine radius relationship, 80:177
Body-scale relationship, cutthroat trout, 81:235, 240
brown trout, 81:171, 175
sauger, 79:31
tullibee, 73:126
walleye, 73:91; 79:189
yellow bass, 82:96
yellow perch, 70:108; 79:36
Body-vertebra relationship, channel catfish, 80:127
Bolcosoma, 80:60
nigrum, 59:110, 252; 60:257; 64:374; 66:357; 67:167; 68:285; 73:247; 75:127, 133, 330; 76:111, 208; 80:65; 82:160, 202
Boltonia, 59:177
Bolvinita, 74:255
Bombing, re smelt mortality, 74:317
Bonefish, 74:267
Bone meal, in trout diet, 60:129
Bonito, catch, sport fishery, 63:335
in hatchery diet, 64:157
in Mexican waters, 67:258; 74:72
in India fisheries, 78:94
oceanic, distribution, 80:114
Bonytail, in Nevada, 80:86
Boric acid, in disease treatment, 68:180; 69:99
Bosmina, 59:99, 175, 184; 60:191; 61:211; 63:379; 65:64; 67:219; 69:248, 250, 252, 253; 70:350, 423, 425; 73:246, 247; 75:170, 328; 78:16; 79:149; 80:73, 76; 82:16, 22, 215
longirostris, 63:379, 386; 64:462; 65:108; 67:218; 82:237
longispina, 63:379; 64:462
obtusirostris, 64:463; 66:115
Boston Fish Pier, sales, 70:89
Bothriocephalus, 59:201; 70:166, 170
claviceps, 63:222; 68:265; 70:167
Bottom fauna, available food, 71:275
changes due to stream improvement, 66:183
comparison in four streams, 68:324
concentration of arsenious oxide needed to kill, 61:144
developed in new impoundments, 62:275
effect of copper sulfate on, 69:143
effect of dams on, 78:70
effect of pollution on, 60:300, 317
effect of rotenone on, 69:152
in Algonquin Park lakes, 82:203
in British stream, 66:384
in Cherokee reservoir, 73:194
in Crecy Lake, 75:171
in Clinch River, 68:229
in three eastern streams, 70:320
in Hocking River, 61:204
in Lake Erie, 63:278
in Lake Winnepeg, 60:235
in Ohio reservoir, 66:81
in ponds, 71:165
in trout stream, 64:71; 71:220; 72:36
in Virginia stream, 66:193
in relation to lake trout, 82:211
in Watts Bar Reservoir, 72:56; 73:206
in western lakes, 71:255
quantitative study method, 60:187
in streams, 64:238
seasonal study, 69:178, 181; 71:169; 81:211, 214; 82:209
standing crop, 82:210
Bottom soil, fertilization, 76:339
of large Prairie Lakes in Canada, 60:215
Bottom types, effect on fauna, 64:245
Bowfin, catch, 73:39; 82:245, 251, 252, 258
effect of electricity on, 61:178
food of, 60:253
in Florida waters, 82:15
in management of ponds, 73:282
in T.V.A. waters, 71:203; 73:150
mortality of, 76:27
parasites of, 61:201; 64:179, 396
population study, 72:187; 81:6; 82:53
trapped in weir, 73:76; 76:166
Brachycentridae, 80:102
Brachycentrus, 70:321, 330; 75:121; 76:310; 77:162, 168, 175; 80:103, 105; 81:252, 253
americanus, 71:225
Brachycercus, 70:243; 75:120
Brachionus, 59:100; 73:244; 82:22
calyciflorus, 66:123
havanaensis, 66:124
patulus, 66:124
Braconidae, 67:216; 69:251
Brasenia peltata, 64:446
Brazil, fisheries investigations, 65:267
growth of catfish, 66:75
Breeding, hatchery experiments, 64:199
of bluntnose minnow, 63:54
of brook trout, 60:114
of creek chub, 75:336
of fathead minnow, 62:382
of johnny darter, 63:55
ponds in Ohio, 61:108
season, blackhead minnow, 61:136
selective, brook trout, 60:109; 64:274
trout, in New Jersey, 62:129
need of, 64:266
Brevoortia gunteri, 79:137
patronus, 79:137
tyrannus, 64:157; 66:225; 67:81; 73:367
Brewer's yeast, in diet, 63:341
British Isles, fishery problems in fresh water, 66:383
British Columbia, course of training for fish culturists, 61:164
egg output, hatcheries, 61:164
fishery research, summary, 63:257
hatching fry in gravel, 66:279
herring population, 63:286
spawning, 64:307

kamloops rainbow trout, migration, 63:80
planting of fry, 62:149
propogation in lakes, 62:144
production, factors influencing, 60:247
kamloops lakes, survey, 62:144
fishing problem, 66:64
planting eyed eggs, 64:379
pollution, 60:267
pond culture of salmonids, 65:172
problems in predation and coarse fish, 64:318
sockeye salmon, artificial propogation, 61:121
conservation of, 60:262
Cultus Lake, 60:173
fin clipping, 61:126
fingerling planting, 60:116
hatcheries, 60:266
migration, 61:122
ponds, 61:129
natural propogation, 61:121
regulations, 60:263
tagging, 62:88
Broth, Difco, nutrient, 63:35
Broth, fish tissue, 63:35
tryptone, 73:36
Brush shelter, 59:204; 63:409
Bryozoa, 59:175; 64:428; 69:207; 73:233; 75:127
Bucephalus elegans, 69:271; 70:167
papillosus, 63:221
Buck Bill, federal aid to fishes, 70:29, 47; 71:28, 38, 53
Buffalo, catch, 78:173; 79:43
effect of tag on, 63:320
electric seining, 77:55
in Des Moines River, 65:116
in T.V.A. waters, 71:203; 72:214; 73:150
movement in lake, Iowa, 66:98
mortality, 75:175
removal, 70:384; 82:106
tagging, 63:326
Buffalo, bigmouth, catch, 73:39; 82:245
population estimate, 78:165
rough fish removal, 82:104
Buffalo, black, catch, 73:39
in Illinois, 80:235
in Lake Texoma, 82:214
rough fish removal, 82:245
Buffalo, smallmouth, catch, 73:39
in ponds, 79:123
in Lake Texoma, 82:214
population estimates, 80:28
rough fish removal, 82:245
Bufo boreas, 82:148
Bugs, food of cutthroat trout, 63:199
grayling, 69:246
trout, 71:109, 225, 257
Bulbochaetes, food of brown bullhead, 60:255
log perch, 60:257
mosquito fish, 61:210
sucker, 60:254
Bulbochaeta, 82:22
Bullfrog, culture, principles of, 61:262
egg laying, 61:264
food, of, 61:264
growth rate, 61:264
habitat, 61:263
predation on smallmouth bass, 61:271
trapped, 82:148
Bullhead, anabiosis, 62:310
catch, 60:232; 66:90, 325; 67:134; 68:356; 72:208, 214; 73:364; 77:22; 80:11, 50
effect of rotenone on, 72:270
electric shocking, 77:60
fishing, 61:140
food of, 60:232; 64:74
in hatcheries, 63:399
in British Columbia, 64:319
in Fish Lake, Utah, 65:127
in reservoirs, 68:221
in T.V.A. waters, 61:203
management, 78:40; 80:231
population study, 72:178; 78:165; 81:8
population in stream, 68:285
predation on walleye, 73:259
production, 66:79
range of pH tolerance, 61:216
removal of population, 75:140
tagging, 74:360
trapped in weir, 73:76; 76:166
yield, potential, 71:69
Bullhead, black, aging, 80:175
catch, 73:39; 78:67; 80:12, 50, 235
effect of pollution on 82:160
effect of rotenone on, 82:173
effect of tag on, 63:321
food of, 65:58
in bass stream, 82:198
in Des Moines River, 75:116
In Louisiana waters, 82:255
in Michigan lake, 78:146
in Nevada, 73:183; 80:90
in Oregon, 69:241
in ponds, 75:88; 79:123
in sewage plant pool, 64:446
metabolism of, 63:215
mortality, 75:175; 76:27
parasites of, 66:358
population, 77:39
removal of rough fish, 82:106
tagging, 63:326; 66:318; 68:258
Bullhead, brown, catch, 65:212; 73:39; 77:15; 78:65
D.D.T., treatment, 76:56, 318
depth distribution, 62:332
effect of arsenic on, 60:270
effect of copper sulfate on, 65:109
effect of pollution on, 82:160
effect of rotenone on, 70:352
food of, 60:255; 69:205
growth rate, 69:205
in Algonquin Park Lakes, 81:115
in Florida, 82:15
in Manitoba, 79:20
in Michigan lake, 78:146
in muskellunge rearing area, 70:422
in Nova Scotian lakes, 67:181
in Oregon, 69:241
in ponds, 79:125
in Pyramid Lake, 69:220
migration, 70:393
parasites of, 70:166
mortality, 64:374; 76:27
population, 65:298; 81:4; 82:53
fluctuations, 70:195
predation on lake trout eggs, 61:183
cisco eggs, 67:242
propogation, 62:165
stocked in ponds, 77:144
toxic food of, 61:77
tagging, 63:326
Bullhead, flat, in Florida waters, 78:39
Bullhead, yellow, catch, 65:212; 73:39; 78:67
electric seining, 77:59
effect of pollution on, 82:160
effect of rotenone on, 82:173
in Florida, 78:39
in pond, 68:132
in sewage plant pool, 64:446
in terrace-water pond, 69:102
mortality, 76:27
population, 75:205; 78:89; 80:220; 81:4; 82:53, 197

fluctuations, 70:196
production, 80:235
size and age composition, 75:222
Bullrush, effect of copper sulfate on, 69:145
in lakes, 75:203, 324
control, 76:187
Bunodera nodulosum, 66:349
sacculata, 70:167, 170
Buprestidae, 69:251
Burbot, age and growth, 70:77; 80:163
catch, 77:86; 79:168, 171
food of, 90:56
in Algonquin Park lakes, 81:129
in Montana, 80:100; 81:268
in Manitoba, 75:332
in Wisconsin, 64:231
marketing of, 60:199
migration, 70:394
parasites of, 64:392; 70:170
trapped in weir, 73:87
yield, potential, 71:69
Bureau of Fisheries, summary of fishery research, 63:262
Bur-reeds, in Quebec, 64:465
Business Sessions, 59:14; 60:12; 61:12; 62:15; 63:14; 64:15; 65:18; 66:18; 67:17; 68:18; 69:18; 70:18; 71:18; 72:13; 73:13; 74:12; 76:391; 77:283; 78:205; 79:235; 80:315; 81:293; 82:291
Butterfish, potential yield, 71:66
Butterfly fish, parasite in, 64:390
Butterfly, food of mooneye, 67:216
food of trout, 71:110
Buttermilk, dried, in trout diet, 59:161; 60:155; 62:127, 190; 63:167, 341; 64:207
Button tag, 71:228
Bythinia, 76:308
By-products of fisheries, 70:72

C

Cabezone, smooth, in coastal lagoon, 69:180
Cabomba, 64:443
Cabrilla, 74:75
Caddis fly, bottom organism, 61:50; 64:241; 66:183; 72:36, 56; 73:200; 81:211
effect of copper sulfate on, 69:145
food of Atlantic Salmon, 65:153
blacknose dace, 64:73
bluegill, 69:246
brook trout, 60:65, 73; 63:186; 64:73, 340; 66:345; 70:231
channel catfish, 67:220
horned dace, 64:73
grayling, 68:190; 69:246
largemouth bass, 66:254
ling, 69:195
mooneye, 67:216
pumpkinseed, 67:217
rainbow trout, 63:255; 66:197
redhorse, 67:218
sculpin, 66:375
silver chub, 67:217
smallmouth bass, 70:317
spottail minnow, 67:221
in Virginia stream, 63:252
production in trout stream, 68:232
Caddis fly larvae, bottom organisms, 71:175, 255
effect of pollution on, 60:319
effect of rotenone on, 68:271
food of cutthroat trout, 63:199
log perch, 60:257
rainbow trout, 64:342
trout, 71:107, 220
Caenis, 60:192; 61:229; 63:389; 65:66; 66:253; 67:220; 70:320; 75:53, 120; 82:19
diminuta, 79:149; 82:30
simulans, 69:250
Calla pallustris, 64:466
Calamagrostis canadensis, 59:177
Lanksdorfii, 59:177
Calcium, in fish meal, 64:295
in Ontario waters, 60:41
in ponds, 66:111; 73:379
requirement of brook trout, 65:359
in trout body, 61:74
Calcium chloride, in trout spawning, 64:346
Calcium hypochlorite, control of algae, 63:141
Calculation, disinfectant quantities, 74:210
California, catch, halibut sport fishing, 63:335
catch, collection of data, 66:301
factory ships, beyond 3 mile limit, 62:24
food of trout, 65:129
golden trout, 64:259
legislation, 59:26; 64:97; 65:39
pollution abatement, 62:359
control, 69:70
research in progress, 63:24
summary of, 63:257
spawning of rainbow trout, 64:167
statistics, methods on sport fishery, 63:332
fishery, 62:94
laws, 62:113
steelhead experiments, 64:248
streams, effects of dams on bottom fauna, 78:70
trout feeding in hatcheries, 65:305
California, Lower, fishing, 71:36
Callibaetis, 59:259; 60:192; 61:229; 76:310; 82:19
floridana, 82:30
Callinectes hastatus, 65:343
sapidus, 65:342; 66:225, 404; 70:74; 73:367; 75:118
toxotes, 74:78
Calliphora erythrocephalon, 65:388
Calomel, 70:271
Camallanus, 59:200; 63:223; 68:265; 81:94, 97, 98
oxycephalus, 63:223
Cambarus, 63:255; 66:197; 70:315, 317, 320, 322; 76:101, 109, 308; 80:61; 81:120
bartonii, 65:71, 150
diogenes, 76:112
immunis, 69:153; 76:109, 113
propinquus, 68:271, 285; 76:109, 112
rusticus, 65:189; 66:275
virilis, 68:285, 76:109, 112
Campeloma, 60:191, 319; 75:116
Camphene, chlorinated, effect on trout and salmon, 77:160, 170, 174
Camponotus herculeanus, 76:111
pennsylvanicus, 69:250
Campostoma anomalum, 59:198; 65:148; 66:357; 75:133; 76:208; 82:160, 193
Camptocercus, 60:191
rectirostris, 65:61, 63, 64, 67; 66:125
Canada, Algonquin Park, 81:111
bacterial disease of trout, 62:152
Biological Board, 60:172
bottom soils of large prairie lakes, 60:215
catch of cisco, 60:204
ling, 60:199
chemical analysis of large lakes, 60:215
fish culture, 67:88
Fisheries Research Board, 81:2

fishery problems in, 60:172
fishways, 60:240
forage fish, 63:59
growth of atlantic salmon in hatcheries, 62:211
international fisheries commission, ratified, 62:23
introduction of fishes, 64:368
lobster in, 60:175
production of commercial fish, 61:25
research in fish culture, 62:261
Cancer irroratus, 70:74
magister, 65:342; 69:107; 70:74
Cannacria gravida, 79:149
Cannibalism, in largemouth bass, 59:213; 64:148; 66:242; 71:350; 72:220
bluegill, 77:142
lake trout, 81:129
muskellunge, 70:426
pike, 80:67
pike-perch, 73:252
spotted bass, less in, 61:84
white bass, 82:215
reduced by feeding method, 59:237
Canning of fish, 70:72
Canning experiments, TVA fish, 73:151
Canthocampus, 59:176; 60:65, 191; 61:211; 80:69, 73, 76
Capillaria, 68:265, 267; 70:166, 168
catenata, 68:266
Capnia, 81:210
manitoba, 72:37
Carabidae, 63:255, 388; 66:197; 67:216; 69:254; 76:109
Caranx, 74:72; 78:94
hippos, 79:142
sexfasciatus, 74:267
Carassius auratus, 59:199; 60:270; 61:132; 63:26, 211, 340; 64:368; 68:271; 69:257; 71:123; 73:181; 75:50, 57, 140; 76:55, 61; 78:100; 79:123; 80:88, 156
Carbon, in aquatic plants, 65:186
in fertilized ponds, 73:262
relation to nitrogen fertilization, 76:251
Carbon bisulphide, weed control, 76:181
Carbon dioxide anesthesia, 72:25
deficiency in pond, 60:277
effect of plants on, 64:182
effect on fish, 61:220; 67:271
effect on trout eggs, 65:194
food canned in, 61:66
in experimental tanks, 69:198
in fertilized pond, 68:130
in hatchery water, 59:196
in Lake Erie, 63:273
in New York lakes and ponds, 64:191
in Ontario waters, 60:41
limiting factor in production, 59:95
loss with oxygenation, 75:234
relation to productivity, 76:325
tensions in respiration, 63:29
Carbon tetrachloride, in disease treatment, 63:172
weed control, 76:181
Carcharias, 78:94
Carcharhinus, 79:141
Carex, 71:219; 76:342
Carp, abundance in N. Y. reservoir, 61:140
anabiosis, 62:340
blood count, 80:185
breeding of, 81:219
catch, 67:134; 72:214; 73:39, 150; 80:50, 206; 82:242
Crucian, in Canada, 64:368
culture in Europe, 76:336; 81:43
depletion, 75:314
diseases, 64:176; 74:22; 77:103
effect of fertilizer on, 76:353
effect of low oxygen on, 69:198
effect of pollution on, 63:71
effect of rotenone on, 75:140
effect of tag on, 63:320
effect of vacuum, 70:472
electric collecting, 77:55
electric control of, 61:174
feeding and fertilizing, 81:220
food of, 64:450; 65:57; 76:341
bass, 61:99
kingfisher, 76:111
fresh and frozen, as food, 71:363
growth of, 59:144; 80:182; 82:258
hatchery food, 59:164; 62:157; 64:136; 65:310, 381; 67:264; 72:30
in bass stream, 68:333; 82:202
in British Columbia, 64:319
Green Bay, Wisc., 71:316
India, 78:94
Louisiana, 82:256
Montana, 80:100; 81:263
Nevada, 73:180; 80:87
Oregon, 69:241
Pyramid Lake, 69:220
in reservoir, 68:221
in sewage plant pool, 64:446
in Texas, 82:214
in Whitmore Lake, Mich., 70:195
knothead, 72:193
midge larvae, as food of, 59:155
mortality, 64:374; 71:114; 73:47; 75:175
movement, 66:98; 69:71; 76:173
nutritive value, 64:436
oxygen consumption, 62:123
planted in Minnesota, 59:225
population study, 72:187; 77:33; 78:163; 80:40, 198
predation on eggs, 77:40
production, in Illinois lake, 80:235
Israel, 81:218
Mississippi river, 79:43
Ohio ponds, 79:131
ponds, 61:132
Yugoslavia, 62:394
removal, 70:384; 82:104
respiration, 59:239
spinal ossification, 73:41
tagging, 63:326; 66:317; 68:259
trapped in weir, 73:87
vitamin requirement, 63:338
yield, potential, 71:68
Carpiodes, 70:384; 73:147; 75:116, 126, 133; 77:55
carpio, 75:133; 81:325; 82:214
cyprinus, 59:155; 66:317, 358; 68:258; 71:206; 73:39, 147; 75:133; 77:13; 78:165; 81:325; 82:160
velifer, 60:215; 63:320; 75:133; 81:255, 325
Carpsucker, catch, 72:214; 73:150
effect of pollution on, 63:71
electric seining, 77:55
in Des Moines River, 75:116
tagging, 63:326
Carpsucker, highfin, change of name, 81:325
Carpsucker, quillback, change of name, 81:325
catch, 73:39
effect of pollution on, 82:160
Carpsucker, river, change of name, 81:325
in Texas waters, 82:214
Carrying capacity, maximum, 80:231
Casein in trout diet, 59:126; 60:129, 140; 63:341
Caspialosa caspia, 62:314
Caspian bream, production in Caspian sea, 62:309
Castalia, 67:179

odorata, 78:64
Castilla, in Mexican waters, 67:258
Cast nets, 74:78
Catán, in Mexican waters, 74:76
Cataract, from pig spleen diet, 63:170
Catarrhal enteritis, 70:297
Catch, analysis, 76:291; 78:178 (see also creel census)
anglers, need for measure, 64:49
angling, Michigan, 65:210; 66:90, 324; 67:125
Minnesota, 78:163
New York, 67:180
reservoir, 68:223
Spring Creek Project, Penna., 68:361
Wisconsin, 66:307
collecting data, Calif., 66:301
correlation, 74:207
curve, definition, 77:115
cisco, 79:181
dwarf and normal fish compared, 77:123
effect of weather on, 66:327
factors influencing, 79:198
hourly fluctuations in, 68:213
interpretation of, 79:199
marine sport fishery, Calif., 63:335; 69:111
per hour, 70:455
per unit effort, 70:105, 176; 72:212; 74:172, 327; 80:300, 310
percentage "wild" fish, 68:205
periodic fluctuation, 80:283
records, Calif., 69:125
statistics, Great Lakes, 63:301
Great Slave Lake, 77:86
Lake of the Woods, 77:16
Oregon lakes, 77:107, 112
total in U. S., 78:217
trends in Fife Lake, Mich., 68:354
record, brook trout, 81:43
bullhead, 60:232
catfish, 60:232
cisco, Lake Erie, 60:204
goldeye, 60:224
lake trout, 60:232; 75:19; 76:136, 143
ling, 60:199
pickerel, 60:228
pike, 60:230
sauger, 60:229
shrimp, 62:108; 82:151
sturgeon, 60:225
suckers, 60:231
trout, 66:314; 75:77; 79:252; 81:230
tullibee, 60:223
whales, in Mexican waters, 67:257
whitefish, 60:217; 62:312; 77:200
yellow perch, 60:229
yellow pikeperch, 66:145
Caterpillars, aquatic, 63:200
food of brook trout, 63:189
rainbow trout, 66:197
Catfish, catch of, 60:232; 80:15
commercial catch, 77:22
diseases, 74:22; 77:103
distribution, Minnesota, 61:240
fishery of Virginia, 73:364
food of, 60:232; 75:110
food of kingfisher, 76:111
in India, 78:94
in TVA waters, 71:203; 73:150
legislation, 60:21; 77:300
management, 78:40
propogation, 61:106; 66:79
relation to turbid water, 75:314
size limit, La., 60:19
yield, potential, 71:69
Catfish, blue, catch, 72:216; 73:39; 80:28
population, 80:28
Catfish, channel, age and growth, 80:119, 174
catch, 72:214; 73:39, 182; 78:66; 80:11, 206; 82:245
diseases, 59:117; 61:172
distribution, Minn., 61:240
eggs, hatching time and temperatures, 59:116; 61:171
number, 59:116; 61:171
size, 59:116
effect of pollution on, 63:7
effect of rotenone on, 82:173
effect of tag on, 63:321
electric seining, 77:57
food of, 61:116, 172; 65:58; 67:220
in Florida, 78:39
in Nevada, 80:90
in Ohio, 67:118
in Oregon, 69:242
in Texas, 82:214
in Virginia, 80:198
midge larvae as food of, 59:155
population sampling, 80:28
production, 59:114; 61:116, 171; 73:374
stocked, 71:347; 80:210
tagging, 61:207; 63:326
trapped in weir, 73:76
vitamin requirement, 63:338
Catfish, flathead, catch, 80:207; 82:245
electric seining for, 77:60
population sampling, 80:28, 198
in Des Moines River, 75:116
in Texas, 82:214
Catfish, marbled, in Ohio, 62:165
tagged, 61:207
Catfish, mud, catch, 72:214; 73:30
Catfish, sea, in Mexican waters, 74:76
Catfish, silver, parasite on, 64:179
Catfish, tadpole, food of, 65:58
mortality, 64:374
Catfish, white, food of, 73:367
in Florida, 78:39
in Nevada, 73:182
in Virginia, 73:364
size, 73:365
Cathyna, 59:101
Catonotus flabellaris, 66:375; 71:107; 76:208
Catostomidae, 59:150; 60:217; 76:109, 112
Catostomus, 75:257; 81:120
ardens, 63:202; 64:390
atostomus, 60:231
catostomus, 62:332; 64:319; 70:163; 71:107; 73:29, 87; 74:234; 75:331; 77:13, 86; 78:17; 80:93; 81:113, 124, 263
commersoni, 59:198, 252, 260; 60:66, 216, 231, 253; 61:163; 62:246, 332; 64:395; 65:109, 152, 212, 298; 66:317, 357; 67:122, 181; 68:163, 211, 258, 271, 285, 324, 331; 69:149, 212; 70:82, 144, 163, 352, 384, 393, 422; 71:107, 112, 287; 73:29, 76, 87; 74:234; 75:50, 55, 175, 179, 205, 223, 264, 330; 76:109, 165, 206, 209, 304, 316, 318; 77:18, 86; 78:66, 83, 171; 79:21, 169, 191; 80:93, 100; 81:10, 113, 115, 227, 262, 290; 82:160, 193
fecundus, 69:176
latipinnis, 80:87
macrocheilus, 62:253; 64:319
syncheilus, 69:198
teres, 70:164
Cattail, 75:203; 76:187
Caudinia, 63:211
C.C.C., stream improvement, Michigan, 63:404
Celery, wild, in sewage plant pool, 64:446
Cellophane, in trout diet, 59:216; 60:137
Cellulose, in trout diet, 59:126; 60:128, 137
Celithemis elisa, 69:254
Celtis occidentalis, 75:127

Centipedes, food of brook trout, 60:73; 63:185
Centrophris aculeata, 64:447
Centropomus, 74:75
Centroptilum convexum, 70:243
semirufum, 70:243
simile, 70:243
Centropyxis aculeata, 66:124
Centrovarium lobotes, 69:271
Ceratichthys perspicuus, 75:127, 132
Ceratium, 62:297; 63:396; 65:118
hirundinella, 73:244
Ceratophyllum, 70:225; 76:187, 345; 79:150; 82:16, 110
demersum, 61:146; 64:371; 65:124, 186; 70:195; 75:203; 76:303; 79:146
Ceratopogonidae, 67:219; 68:191; 71:170; 72:141; 76:310
Ceratopogoninae, 60:192; 63:380, 389; 65:63, 66, 67; 69:247, 248, 250, 254
Ceratopogons, food of mosquito fish, 61:211
Cercopidae, 60:66; 67:219, 223; 69:251
Cereals, in trout diet, 59:161; 63:167
Ceresa diceros, 75:120
Ceriodaphnia, 59:99, 176, 209; 60:191; 70:350
laticaudata, 78:100
pulchella, 82:237
quadrangula, 62:322; 66:123
reticulata, 63:387; 65:61-67; 73:246 78:103, 109
sphaericus, 66:125
Cestodes, in fish, 63:222; 66:357; 71:287
Ceuthophilus maculatus, 69:250
meridionalis, 69:254
Chaenobryttus coronarius, 59:110; 66:357; 68:265; 69:241; 70:359; 71:184, 203; 73:39, 47, 147; 76:27; 78:39; 79:122; 80:31; 81:10; 82:15, 48, 247
Chaetodon Fremblii, 59:180
Chaetomorpha, 59:182
Chaetopoda, 60:191; 71:109
Chalcididae, 65:64; 67:222, 223
Chanos chanos, 59:181, 74:74, 250, 262, 267
salmoneus, 78:94
Chaoborinae, 71:170
Chaoborus, 70:351, 359; 71:187; 73:202, 246; 78:152; 79:148; 81:113, 115, 123; 82:19, 203-9
punctipennis, 68:191; 69:248, 250; 76:310
Chapeta, 74:76
Chara, 59:258, 261; 60:64, 91; 61:50; 62:198; 64:182, 443, 446; 65:124, 133; 66:182, 374; 70:225, 390, 411; 73:379; 75:49, 202; 76:249, 303; 77:99; 78:14
cornata, 72:136
Char, correct spelling of name, 81:326
management, 71:333
taxonomy and habits, 72:79-91
Char, Alpine, taxonomy and habits, 72:87
Arctic, parasites of, 64:395
in Manitoba, 79:26
Greenland, in prairie provinces, 60:233
Chauliodes, 60:65
Chasmistes cujus, 69:222
Cheese, cottage, hatchery food, 67:267
Chelydra serpentina, 70:205, 423; 75:58
Chemical Analysis, of aquatic plants, 65:186
comparison of four streams, 68:325
of crabs, 65:343
for factor H, 66:293
of fish, 62:392
Fish Lake, Utah, 65:124
foods, table, 65:397
hatchery pond, 63:396
Maligne Lake, Alberta, 60:223
Manitoba lake, 75:326
Michigan, Deep Lake, 75:202
New Brunswick, lakes, 70:348; 75:172
New York lakes and ponds, 64:189; 68:304
Ohio, impoundments, 63:265; 66:78
Ontario waters, 60:41, 54, 146, 299
ponds used in sodium arsenite experiments, 61:143
prairie lakes of Canada, 60:215
Quebec lakes, 62:197
Sacandaga reservoir, 61:140
sewage effluent, 64:444
trout, 61:58-79; 68:316
trout stream, 64:68
water from oil field, 64:81
western Lake Erie, 63:273
Winnipeg River, 60:314
Chemical composition, trout body, effect of diet on, 61:74
atlantic whiting, 66:419
Chemical, disinfectants for ponds, 63:158
Cheonda hydrophlox, 63:202; 65:127
Cherna, 74:76
Cherokee Reservoir, T.V.A., 71:351; 72:212; 73:194; 80:46, 48
Chesapeake Bay, blue crab production, 62:46
croaker in, 70:475
decline of shad, 71:144
fisheries of, 62:43
fishery statistics, 71:66
oyster production, 62:44; 63:156
size of, 62:43
striped bass movements, 67:80
Chesapeake Biological Laboratory, 62:45, 50; 70:140, 475
Cheumatopsyche, 75:53
pettiti, 70:243
Chickamauga Reservoir, 72:52
Children's angling reserve, 71:321
Chilodon, 61:202; 63:161; 65:333; 70:299; 74:24, 219; 76:18
cyprini, 59:199
Chimarrha, 60:65
aterrima, 70:243, 245; 71:221
obscura, 75:52
socia, 75:52
Chionecles phalangium, 65:342
Chironomidae, 59:153-9, 258, 259, 261; 60:65, 81, 105, 192, 204 219, 229, 235, 319; 63:255, 379, 380, 382-90; 64:121; 65:61-8, 131; 66:197; 67:216-23; 68:191; 69:247-54; 70:230, 321-4, 332, 352; 72:141-4; 73:202, 233, 377; 76:109, 113, 257, 310, 312; 80:61, 65, 67, 78, 81, 101, 104; 81:114, 115, 120, 124, 210; 82:15, 19, 24, 204-9, 213, 215
Chironomus, 59:153, 176, 192; 60:81, 222, 224, 254, 255, 256, 257, 258; 62:198; 63:104 202; 64:152, 206; 65:62-8, 153; 68:330; 69:122, 153, 206; 72:278; 76:342; 78:64; 79:59; 81:251, 252
crassicaudatus, 65:66
fulviventris, 65:66
lobiferus, 76:310
modestus, 71:220; 76:310
plumosus, 76:310; 78:152
tentans, 63:136
Chi-square, 81:10, 17, 20, 21, 25, 31, 157, 158
Chlamydomonas, 66:114; 68:128; 71:115; 79:107
communis, 64:414; 66:288
Chloeon minor, 70:243
rubropictum, 70:243
triangulifer, 70:243, 245, 246
Chlorangium stentorinum, 64:447
Chlorella, 68:128; 73:392; 79:107, 226

Chlorides, blood, 74:297
effect on fish, 64:81
in ponds, 73:377
relation to productivity, 76:326
toxicity threshold of Daphnia, 78:86
Chlorinated lime, pond sterilizer, 64:134
Chlorine, beach treatment, 65:119
control of algae, 63:141
disinfectant, 74:27
effect on clams, 60:269
gill worm treatment, 61:190
in Minnesota ponds, 66:110
Chlorodan, effect on trout and salmon, 77:160, 163, 174
Chloromyxum, 74:24
Chloroterpes basalis, 70:243
Chlorophyceae, 59:176; 82:16, 22-8
Chlorozene, in disease treatment, 68:180; 73:36
Chondrococcus columnaris, 80:240
Chriopeops goodei, 82:15, 26
Chroococcus, 59:97; 65:107; 66:119; 82:22, 235-9
dispersus, 82:235, 238
Chrosomus eos, 65:132; 67:122; 70:165; 75:39; 76:250; 80:69; 81:113, 120
erythrogaster, 59:259; 62:198; 70:144; 76:209
Chrysemys, 70:205, 423; 75:58
Chrysomelidae, 67:216; 69:248, 251; 76:109, 111
Chrysops, 60:81; 69:250
Chirotenetes, 60:65, 81
Chub, catch, great lakes, 63:301
effect of low oxygen on, 69:198
food of lake trout, 67:155
food of burbot, 80:57
in British Columbia, 64:319
in Fish Lake, Utah, 65:127
population studies, 80:36
tagged, 68:258; 69:65
yield, potential, 71:69
Chub, northern bigeye, effect of pollution on, 82:160
Chub, creek, age, 82:198
effect of copper sulfate on, 65:109
effect of electric shocker, 81:57
effect of pollution on, 82:160
effect of rotenone on, 70:82
food of brook trout, 60:66
northern pike, 80:69
rainbow trout, 76:304, 309
in Algonquin Park lakes, 81:113, 115, 125
in bass stream, Illinois, 82:193
in small Michigan lakes, 67:122
in Nova Scotian lakes, 67:181
in trout stream, 71:107; 76:208, 259
length-weight relationship, 82:197
parasites of, 70:164
population of, 65:298; 68:285; 81:227
predation on salmon fry, 78:131
propogation, 75:336
trapped in weir, 76:166
Chub, flathead, in Missouri River, Montana, 80:100
Chub, hornyhead, propogation, 75:134
Chub, humpback, in Lake Mead, Nevada, 80:87
Chub, Klamath, population in Oregon, 77:105
Chub, lake, age and growth, 78:21
effect of rotenone on, 69:149
in Algonquin Park Lakes, 81:113
in New Brunswick, 70:354
in Pyramid Lake, Alberta, 78:17
in western high lakes, 71:254
Lake Michigan, 74:144
movement, 81:290
regulations, Great Lakes, 59:64
Chub, leather, in Lake Mead, Nevada, 80:87
Chub, Reighard's, age, growth, distribution, 72:108; 76:237
Chub, river, electric seining, 77:58
Chub, Utah, selective poisoning, 70:81
in Nevada, 73:182
Chub, silver, in Texas, 82:214
Chubsucker, age, 82:199
catch, 78:89
D.D.T. treatment, 75:50; 76:316
effect of rotenone on, 72:270; 75:140
environment of, 59:253
food of, 65:57
forage fish, 59:91; 63:60
growth, 82:199
in Florida, 78:39
life history, 65:141
mortality, 64:374; 76:27; 78:83
oxygen threshold, 76:32
propogation, 65:132
Chucumite, 74:75
Chydorus, 59:100, 176; 60:64, 187; 61:211; 70:350; 73:246; 80:69, 71, 73, 76; 82:16, 22
sphaericus, 63:379, 383; 64:462; 65:61-7, 108; 66:123, 125; 67:218
Chylodon, 60:110
Cicadellidae, 60:66; 63:388; 66:197; 67:216, 219, 220, 223; 69:253; 76:112
Cichlid, food of bass, Cuba, 66:368
Cichlasoma, 66:368
Cierras, 74:78
Circulation, artificial, of Lakes, 82:222
Cirrhina mrigala, 78:94
Cisco, age and growth, 73:125-136
body-scale relationship, 73:126
commercial fishery, 62:100; 73:132; 74:230-49; 77:86
depth distribution, 62:332
disappearance of, 60:204; 76:122
fecundity, 67:234
food of, 67:242
food of brook trout, 60:66
burbot, 80:65
lake trout, 60:232; 67:156
lawyer, 67:170
gillnet catches, 73:29
growth of, 67:234
growing season, 70:183; 77:227
in Birch Lake, Michigan, 76:302, 304
in Indiana, 82:50
in Manitoba, 75:330
in Wisconsin, 64:231
length-weight relationship, 73:130
migration, 67:240; 70:395
mortality, 79:180
parasites of, 70:162
planting of fry, 60:116
spawning of, 67:241
yield, potential, 71:69
Cisco, longjaw, age, growth and distribution, 76:219-247
Cisco, shallowwater, vote for name, 82:327
Cladocera, 59:175, 176, 190; 60.64, 254-58, 316; 61:204; 62:156-66; 63:379-90, 397; 64:73, 74, 122, 461; 65:126, 127; 66:115, 253; 67:216-23, 242; 68:190; 69:122, 206; 70:351; 71:255; 73:233-42; 76:305-8; 81:126, 246; 82:23-9, 215-7
Cladophora, 59:182, 184; 63:392; 66:272; 73:386-8; 74:252, 254, 265, 340; 82:287
Clam meal in trout diet, 59:151; 60:147
Clam, effect of temperature on, 60:269
food of bluegill, 69:246
brook trout, 60:73-80; 65:127
cutthroat trout, 63:200

grayling, 69:246
rainbow trout, 65:126
trout, 65:130
hatchery food, 65:385
in bottom fauna, 66:183; 71:255
in coastal lagoon, 69:180
production of, 61:24
quick fgreezing of, 62:80
yield, potential, 71:65
Clam, Pismo, 74:80
Classification of titles, fishery articles and subjects, 68:26
Classification, fish cultural products, 71: 290
Clemmys insculpta, 75:58
Clinostomum marginatum, 61:201; 63:222; 68:265-7; 70:163-9; 71:287
Clinostomus elongatus, 76:208
Clonorchis sinensis, 64:394
Closterium, 60:254, 255; 65:107; 82:22
acutum, 66:119
Clupea harengus, 62:314; 64:157; 75:264
ilisha, 78:94
pallasii, 63:286; 64:307; 70:98; 75:72-76; 82:118
Clupanodon caeruleus, 67:258
pseudohispanicus, 64:157
Coarse fish, removal, 70:86, 382; 71:267, 319
Cobia, 79:141
Cocoanut meal, in trout diet, 59:126
Coccinellidae, 66:197
Coccoid granules, 75:35
Cocconeis, 66:114
placentula, 66:119-22
Cod, effect of temperature, 60:174; 64:387
freshwater, food habits of, 80:56
introduced into Argentina, 69:280
pacific cultus, in trawl fishery, 69:107
production, 61:24; 80:355
nutritive value, 64:436
tagging, 73:321
yield, potential, 71:65
Cod liver oil, in trout diet, 59:126-45; 60: 129; 61:61; 62:127, 128; 63:341
elimination of backswimmers and beetle larvae, 64:136
from ling, 60:202
food of young channel catfish, 61:172
Code, for commercial fishing, 64:33
Codonella cratera, 66:119, 123
Coefficient of Condition, method of calculation, 70:283; 75:241, 256
formula, 80:94, 253; 81:50
atlantic salmon, 66:218; 67:190, 197
bluegill, 72:242
brook trout, 70:282; 72:48; 80:258; 81:50
brown trout, 80:97; 81:176
carp, 80:52
cutthroat trout, 81:235, 244
kiyi, 74:122
largemouth bass, 75:250
longjaw cisco, 76:238
northern pike, 75:254
pumpkinseed, 75:246
rainbow trout, 63:254; 70:282; 73:117; 80:97, 258
Reighard's chub, 72:123
rock bass, 72:75; 75:252
sculpin, Utah, 81:249, 256
smallmouth bass, 75:248
trout, 80:251, 256, 258
walleye, 81:191
whitefish, 68:158; 77:231
yellow bass, 82:91, 101
yellow perch, 70:117; 75:244
Coelastrum, 73:390, 392; 82:235
microsporum, 66:122
Coelenterata, 60:191
Coelosphaerium, 60:254-7
naegelianum, 66:119
Coenagrionidae, 65:65; 66:253; 67:218
Coleoptera, 59:175, 258; 60:66, 192, 224; 63:194, 199, 255, 385; 65:126, 131, 153; 66:183, 197; 67:216, 221, 223; 68:190, 232; 69:207, 246; 72:56; 73:200, 246; 76:109, 112; 80:52, 78, 102, 105; 81:212, 214, 235, 245, 252, 253; 82:21, 216
Collecting, electrical method, 69:210; 70: 404; 77:49
Coleps hertus, 64:447
Coloburus, 67:217
Collar tag, 73:323, 332
Collembola, 60:81, 105, 191; 71:109; 81:246
Colloidal phosphate as fertilizer, 72:227
Colpidium, 61:230; 69:180
striatum, 64:447
Color, in Minnesota pond, 66:108
Coloration, newly planted trout fingerlings, 62:134, 137
Colorado, effect of drought on fish, 64:60
food habits of trout, 65:381
legislation, 59.26; 64:97; 70:29; 71:28
spawning of rainbow trout, 64:167
Colorado River, 71:302, 305
Columbia River, columnaris disease, 73:33
fishery development, 78:42-55
Power Authority, 71:29
Columnaris disease, 62:114, 73:32-36; 77: 138
Colurus grallator, 64:447
Commercial Fishing, Division of, Report, 60:18; 61:23; 62:32; 63:31; 64:32; 66:34; 67:26; 68:27; 69:28; 78:217; 80:352; 81:323; 82:320
Commercial fisheries, Canada, 80:354
fishing census, T.V.A., 73:142
code for, 64:33
Lake Superior, 80:278
improvement in boats and equipment, 68:29
inland waters, 82:242, 253
processing and marketing, 68:30
relation to sport fishery, 70:70
Tennessee statistics, 68:240
value of, 80:232
Commission Pacific halibut, work of, 63:85
Michigan Stream Control, work of, 64:92
Committees, reports of, 59:31; 60:22; 61: 29; 62:20; 63:19; 64:20; 65:21; 66:23; 67:22, 35; 68:32; 69:39; 70:30; 71:33; 76:433; 77:304; 78:220; 79:278; 80: 328; 81:306; 82:303
Committees
American Fish Policy, 64:25; 65:27; 66:29; 68:39; 70:34
Auditing, 59:35; 60:23; 61:29; 62:33; 63:41; 64:40; 65:43; 66:40; 67:35; 68:52; 69:51; 70:44; 71:51; 76:433; 77:327; 78:245; 79:298; 80:361; 81: 347; 82:331
Commercial Fisheries, 80:352; 81:323; 82:320
Common and Scientific Names, 63:23; 64:25; 65:26; 66:28; 69:43; 70:32; 76:419; 77:314; 80:356; 81:324; 82:326
Dues increase, 77:321
Duties of, 70:492
Editorial Board, 77:314; 78:239; 79: 276; 80:359; 82:313
Employment and Professional Standards, 81:336; 82:329
Executive, 61:33, 66:23; 70:22
Fishery Advisory, 70:70
Hydrobiology and Fish Culture, 80:351; 81:314; 82:315

International Relations, (Foreign Relations), 59:31, 37; 60:22; 62:22; 63:20; 64:20; 65:22; 66:24; 67:22; 68:34; 69:39; 70:30, 47; 71:33; 76:404; 77:304; 78:220; 79:255; 80:328; 81:306; 82:303
Lake Erie Advisory, 63:21; 64:22; 65:23; 66:26
Membership, 80:358; 81:327; 82:328
National Resources, 70:38
Nominations, 59:38; 60:25; 61:30; 62:38; 63:47; 64:42; 65:45; 66:43; 67:36; 68:54; 69:57; 70:49; 71:55; 76:440; 77:334; 78:252; 79:305; 80:365; 81:347; 82:334
Pollution, 65:29; 66:29; 67:23; 68:37; 69:49; 70:37; 71:42; 76:425; 77:317; 79:278; 81:338
Publications, 69:44; 70:34; 76:421; 77:322; 78:243; 81:333
Regional Divisions, 77:321; 78:241; 79:296; 81:329
State and National Relations, 59:33; 60:22; 62:24; 64:23; 65:24; 71:36; 76:417; 78:232; 79:271; 80:346; 81:313; 82:304
Resolutions, 59:35; 60:24; 61:29; 62:33; 63:42; 64:40; 65:43; 66:40; 67:35; 68:53; 69:52; 70:46; 71:51; 76:434; 77:322; 78:246; 79:298; 80:361; 81:349; 82:331
Revision of By-Laws, 65:44; 66:42; 77:318; 78:240; 79:282
Time and Place, 59:37; 60:23; 61:29; 62:38; 63:46; 64:41; 65:44; 66:43; 67:36; 68:55; 69:53; 70:45; 71:55; 76:433; 77:327; 78:245; 79:298; 80:361; 81:347; 82:331
Common names of fishes, list, 75:353-397
Compact, Atlantic States Marine Fisheries, 71:27, 323
Competing species, 73:105
Competition, effect on growth, 79:118
ling vs. commercial fish, 60:199
young pike and other fish, 80:77, 81
trout and whitefish, 80:108
Competitors, effect of removal of, 78:28
Concentrations, disinfectant, 74:219
Concha madre perla, 74:80
Congener, 74:252
Connecticut, alewife fisheries, 73:395
arsenic pollution, 61:160
brook trout, age at planting, 61:40
collecting smallmouth bass fry, 61:114
copper pollution, 61:160
effect of pollution on shad, 61:160
legislation, 59:26; 64:97; 71:27
nicotine pollution, 61:160
oyster production, 63:156
trout diet, 60:155
tagging, 63:308; 66:319
watershed, 71:333
Conorhyncus conirostris, 65:268
Conservation, basic facts, 77:276
button clams, 66:409
cisco, 67:242
consideration of Hoover report, 79:13
education, 71:331; 76:118
immature fish, otter trawling, 62:57
kiyi, 74:140
Missouri River Development, 76:382, 287
objectives of fisheries research, 69:29
principles of, fish, 63:91-97
public waters, 77:275
sockeye salmon, British Columbia, 60:262
water, 64:54
Constitution and By-Laws, 59:276; 60:327; 61:283; 62:399; 63:418; 64:472; 65:406; 66:446; 67:290; 68:372; 69:304; 70:490; 71:374; 72:288; 74:373; 79:282; 82:343
amendment to by-laws, 66:42; 69:57; 71:51
Contracaecum, 61:211
brachyurum, 70:168, 170
spiculigerum, 68:265-7
Convention, North Sea, signed, 67:22
Pacific Halibut, 67:23
Sockeye Salmon, 67:23
Conversion factors, length, 70:283; 75:237; 76:241; 81:139
Coolidge reservoir, 71:82
Coontail, 75:203; 76:187
Coordination Act, 1934, 71:307
Cooperation, Federal-State, 71:343
Cooperative agreement, 71:320, 322
Cooperative marketing association, 70:188
Copepods, effect of copper sulfate on, 69:143
effect of fertilizer on, 64:152, 414
effect of pollution on, 60:316
effect of rotenone on, 70:351, 359
food of alewife, 64:122
bluegills, 73:233
brook silversides, 67:218
brooktrout, 60:65, 82, 105
brown bullhead, 60:255; 69:207
channel catfish, 67:220
cisco, 67:242
common shiner, 60:255
cutthroat trout, 63:199
fish, 59:190; 63:379-90
grayling, 68:190
Hawaiian fish, 74:255
johnny darter, 60:257
largemouth bass, 63:136; 66:253
log perch, 60:257
mosquito fish, 61:211
rainbow trout, 76:305
rock bass, 60:256
sand shiner, 67:223
sculpins, 66:374
spottail shiner, 67:221
spotted gar, 82:23
sucker, 60:254
white bass, 82:213
white crappie, 60:256
white perch, 72:141
yellow perch, 60:258
host of cestode, 63:222
in coastal lagoon, 69:180
in Hocking River plankton, 61:204
in Minnesota ponds, 66:115
in Quebec lakes, 64:461
in sloughs, 60:191
parasitic, 61:202; 63:223; 65:334; 66:357; 68:265
plant and animal associations, 59:175
Copper, in crab meat, 65:343
pollution in Conn., 61:160
use in oyster production, 62:73
Copper sulfate, control of algae and weeds, 59:185; 63:141; 64:423; 66:272; 73:59; 76:178
disease treatment, 61:114, 172; 62:114; 63:161; 65:86; 67:230; 68:146, 180; 69:96; 70:380; 73:36; 74:34
effect on fish, 65:115
effect on fish foods, 65:115
eradication of fish, 64:276; 65:101, 297; 67:178; 69:141; 70:81
use in starfish control, 62:78
Coptotomus, 69:248
Corallobothrium fimbriatum, 70:166
Corbina, in Mexican waters, 67:258; 74:75
Cordulegaster maculatus, 75:120
Coregonidae, 60:217; 70:483; 80:57
Coregonus, 62:250

albula, 64:368
artedii, 82:50
clupeaformis, 60:217; 62:208, 314, 332; 63:381; 64:231; 65:288; 68:152; 69:65, 280; 70:162, 180, 393; 71:118, 286; 73:29, 132, 188; 74:234; 75:282, 306, 330, 334; 76:122, 150; 77:13, 123, 178-249; 78:100, 176; 79:21, 169; 80:281; 81:181
exiguus, 62:393
odonoghuei, 75:331
williamsoni, 60:216
Corethra, 62:198; 68:63; 69:145; 72:278; 92:205
Coris, 63:210
Corixa, 60:224, 230; 62:308; 82:16, 19, 29
Corixidae, 60:66, 192; 63:255, 279, 380, 384, 389; 65:66; 66:197, 254; 67:217; 69:247; 70:317, 326; 81:120
Corn meal, in diet, 63:341
Cornuda, 74:73
Cornus, 75:127
Corophium, 74:268
spinicorne, 69:180
Correction factor, growth, 71:74
Correlation, commercial and rod catches, 74:207
growth and weight, 72:225
length, weight and egg production, 71:195
planting and catch, 71:118
rainfall with catch of shrimp, 82:151
turbidity and year classes, 75:318
Corrodentia, 68:190
Corydalus, 73:202
cornutus, 75:54, 120
Corynoneura, 65:61, 62, 64
Coryphaeschna, 62:165
ingens, 79:149
Coryphaena hippurus, 74:77; 79:142
Coscinodiscus, 74:254
Cosmarium, 60:254; 61:211; 65:107; 66:119; 82:22
Cost, diet of salmon, 73:66
rearing trout, 71:258
stocked fish, 72:211
stream improvement, 75:270
Costia, 63:161; 74:24, 219
necatrix, 61:129; 62:394; 65:332; 70:441
Costiasis, disease loss, 76:16
Cottidae, 59:150; 60:217; 78:180; 80:57, 60
Cottonseed meal, in daphnia culture, 64:207
in hatchery diets, 59:126; 60:131; 61:60; 62:190; 63:167; 65:161, 310, 387; 68:99; 71:363
fertilizer, 63:103, 112; 64:129; 69:258; 72:97, 224; 73:264, 266, 382; 74:342
Cottus, 59:258; 63:59; 64:335; 65:127; 66:140; 70:412; 76:109, 309, 312; 80:64, 100; 81:236
aleuticus, 65:145; 77:162
asper, 64:251, 319; 65:145; 69:180; 82:148
bairdi, 69:260; 60:66, 84; 62:246; 63:234; 66:374; 68:285; 72:37; 76:113, 208, 304, 309; 80:64, 87; 81:171, 227, 249, 252, 263; 82:202
beldingi, 81:250
cognatus, 59:259; 60:66; 62:246; 63:234; 66:374; 67:167; 68:285; 69:212; 74:234; 75:330; 76:112, 208, 250; 80:64
gulosus, 64:251, 335
ictalops, 60:258
ricei, 67:167
Couesius plumbeus, 69:149; 70:234, 354; 71:286; 78:17; 81:113, 115, 290
Council, of society, meeting, 62:20; 63:19; 64:20; 65:21
Great Lakes Conservation, 65:23
National Planning of Commercial and Game Fish Commissioners, 64:24
North American Fishery Investigations, 64:22; 65:24; 66:24
Covariance, analysis of, 70:417; 71:125
Crabs, commercial fisheries, 70:74
composition of, 65:344
food of fish, 79:139
market, in trawl fishery, 69:107
quick freezing, 62:80
Crab, Blue, food of catfish, 73:367; 75:118
food of striped bass, 66:225
nutritive value, 65:342
production, Chesapeake Bay, 62:46
research on, Maryland, 62:53
Crab, Japanese, food value, 65:342
Crab, Hawaiian, 74:267
Crab, Mexican, 74:78
Crab, Mud, as hatchery food, 64:158
in Hawaii, 74:267
Crab, Red, in Hawaii, 74:267
Crab, Samoan, largest swimmer, 74:267
Crab, Sand, nutritive value, 65:342
Crabs, yield, potential, 71:67
Cranefly, effect of rotenone on, 68:271
food of blacknose dace, 64:73
brook trout, 60:66; 63:186; 64:73
cutthroat trout, 63:199
rainbow trout, 66:197
sculpins, 66:375
smallmouth bass, 70:317
in Virginia Stream, 63:252
Crangon crassimanus, 74:268, 273
Crappie, effect of electricity on 61:178
effect of pressure on, 61:221
effect of rough fish removal, 82:106
effect of vacuum, 70:469
catch, 70:384, 387; 78:168; 80:11, 46, 231
diseases of, 74:24
food of, 63:61; 79:145-54
egg production, 71:350
growth, 70:335; 76:65, 76; 79:133
host for glochidia, 59:218
introduced in Minnesota, 59:228
management, 76:178
natural cycles, 67:118
oxygen threshold, 76:32
population investigation, 78:163
propogation, 61:80, 116; 66:79
sex ratio, 76:76
stocking policy, 71:346
tagging, 80:9
Crappie, black, angling for, 66:311
catch, 65:221; 67:134; 73:39, 232; 78:68; 80:12, 48; 82:245
effect of oxygen concentrations on, 61:218
effect of rotenone, 82:173
effect of tag on, 63:323
food of, 60:163; 63:387
food of white bass, 82:218
growth, 79:191; 82:255
in Des Moines River, 75:116
in Florida waters, 78:39
in Nevada, 73:187; 80:91
in Oregon, 69:241
in ponds, 69:257; 79:122
in reservoirs, 68:221
in Texas, 80:210
in T.V.A. waters, 71:203
in Whitmore Lake, Mich., 70:195
in Wisconsin lakes, 82:35
mortality, 71:112; 75:175, 179; 76:27; 78:83
parasites of, 68:266
population study, 72:186; 73:259; 77:39; 80:31; 81:4; 82:53
propogation, 61:83; 73:250, 373; 80:198

tagging, 63:326; 79:157; 80:5
trapped in weir, 73:76
Crappie, white, annulus formation, 66:227
catch, 71:203; 73:39; 78:66; 80:12, 48; 82:242
effect of arsenic on, 60:270
effect of pollution, 82:160
effect of rotenone on, 82:173
effect of tag on, 63:323
food of, 60:163, 256; 63:386; 65:59; 71:178; 82:215
growth, 70:183; 80:182
parasites of, 66:358
in Arkansas, 61:83
in Des Moines River, 75:116
in ponds, 69:257; 75:88; 77:142; 79:122, 127
in Oregon, 69:241
in Texas, 82:214
mortality, 64:83, 374; 77:102
population, 80:31; 82:244
production, 77:148; 79:135; 80:198
stocking, 71:358
stunted, 71:103
tagging, 61:207; 63:326; 68:258; 80:5
Crassiphiala bulboglossa, 69:271
Crayfish, destroy vegetation, 64:150
effect of rotenone on, 68:271; 69:153
feed on dead trout, 63:229
food of brook trout, 60:65, 73
kingfisher, 80:56
lake trout, 81:127
lawyer, 67:170
merganser, 66:336
pike, 60:231
rainbow trout, 63:255; 66:197; 76:305
smallmouth bass, 70:315
spotted bass, 62:186
sturgeon, 60:227
yellow perch, 60:258
habits of, 65:189
in bottom fauna, 66:183; 72:56
in ponds, 62:160; 63:397
introduced for weed control, 61:149
life history, 66:275
population in stream, 68:285; 78:258
propogation, 71:326
trapped in weir, 82:148
Creel census, in Arizona, 72:150
British Columbia, Paul Lake, 69:189
California, 66:301; 69:125
California, marine sport fishery, 69:111
Illinois, 80:231
Indiana, Gordy Lake, 82:48
Iowa, 80:50
Michigan, 59:236; 60:183; 65:207; 66:87, 182, 324; 67:125; 68:200, 354; 70:251, 446; 76:269; 79:83; 82:265
Minnesota, 73:109; 78:168
Missouri, Lake Wappapello, 82:251
New England, trout stream, 68:78
New Hampshire, 66:313; 67:224
New York, 67:130; 73:212
North Carolina, 72:204
Ohio, 71:347; 78:65
Oklahoma, 80:11
Ontario, 70:172; 75:19
Oregon, 77:106
Pennsylvania, Spring Creek Project, 68:36; 73:161
Saskatchewan, 70:225
southwest streams, 67:253
Tennessee, 68:242; 71:336
T.V.A., 72:103; 73:141; 80:2, 46
Utah, 73:52
Vermont, 65:226
Virginia, 63:253; 80:204
Washington, 70:214
Wisconsin, 72:92
Creel Census, method of, 80:11, 202; 81:225
need for, 64:49
statistical analysis of data, 76:290-300
Creosote, in disease treatment, 63:172
Crepidostomum cooperi, 70:162, 167, 169; 71:287
cornutum, 60:85; 63:221; 68:265; 70:166
faronis, 66:347; 70:162
Fausti, 66:344
ictaluri, 70:166
laureatum, 66:357
transmarinus, 66:347
solidum, 66:347
Cresol, anesthesia, 70:273
concentrations, 70:305
control of parasites, 71:123
effect on brook trout, 70:304
toxicity, 70:307
use in stream population estimation, 69:233
Crenichthys baileyi, 80:87
Cress, water, hatchery food, 67:265
Crickets, food of brook trout, 60:66; 63:191
food of rainbow trout, 63:255; 66:197
food of trout, 71:109
Cricotopus, 67:217, 219, 221
trifasciatus, 65:63, 64, 66
Crisco, in trout diet, 63:171, 341
Cristatella mucedo, 68:193
Cristivomer namaycush, see *Salvelinus*
Croaker, distribution, 70:245
food of menhaden, 79:141
food of striped bass, 67:81
in Maryland, 66:403
potential yield, 71:65
tagging, 73:321
Crucigenia, 82:236
rectangularis, 66:119, 122; 82:235
Crustacea, Brine Shrimp, food of fishes, 63:129
description of Caledonia Shrimp, 63:120
effect of copper sulfate on, 65:118
food of bullhead, 64:74
carp, 65:61
chubsucker, 65:61
cutthroat trout, 63:200; 81:246
fishes, 63:131
horned dace, 64:73
lake trout, 81:122
largemouth bass, 63:379
pike, 80:67
trout, 59:146
in bottom fauna, 60:191
intermediate host of tapeworm, 64:392
Lake Erie, 63:277
number in fertilized pond, 59:98
oxblood in culture of, 63:103
parasitic, 69:268
propogation of, 64:205
Cryptoglena pigra, 66:119
Cryptogonimus chyli, 63:222
Culex, 76:310
Culicidae, 73:202; 81:120, 124
Cultural characteristics, of *Bacterium salmonicida*, 82:131
Cultus Lake Hatchery, disease investigation, 62:253
Curculionidae, 69:251; 76:111
Curing of fish, 70:72
Curimata, in Brazil, 65:268
Current, effect on trout migration, 63:83
limiting factor for insects, 70:243
relation to croaker distribution, 70:481
Cusk, nutritive value, 64:436
Cutlass fish, 79:141
Cyanide, ferro-ferric, toxicity of, 78:192
Cyanophyta, 82:223

Cyanophyceae, 81:222
***Cybister*, 66:267**
***Cycleptus elongatus*, 80:38**
Cycles, Atlantic Salmon runs, 74:195
food, Hawaiian fishes, 74:250, 262
***Cyclochaeta*, 61:114, 202; 63:161; 64:138; 65:333; 66:272; 69:169**
***Domerguei*, 59:199, 200**
Cyclochaetosis, in brook trout, 67:228
in Ohio hatcheries, 61:107
***Cyclops*, 59:99, 176, 191, 209; 60:65, 187, 222; 61:211, 230; 62:297; 63:278; 64:447; 66:364; 67:219; 70:315, 324, 350; 72:276; 73:246; 75:328; 77:84; 78:16, 21, 140; 79:107, 149; 80:73, 76; 82:16, 22, 215**
***albidus*, 63:389; 64:461; 65:63, 65, 67**
***americanus*, 63:379; 65:61-7**
***ater*, 65:66**
***bicolor*, 64:462**
***bicuspidatus*, 63:379-90; 66:115**
***brevispinosus*, 64:392**
***fimbriatus*, 64:461**
***fuscus*, 65:66**
***leucharti*, 63:222, 379-90; 64:462; 65:64-8**
***modestus*, 64:461**
***haleratus*, 64:462**
***prasinus*, 61:201; 63:222; 64:392; 67:218**
***serrulatus*, 63:379; 65:63-7; 66:115**
***vernalis*, 78:101, 103**
***viridis*, 64:461; 65:108; 70:224**
***vulgaris*, 63:222**
***Cyclopsetta panamensis*, 74:76**
***querna*, 74:76**
***Cyclotella*, 66:114, 119**
***Cybium*, 78:94**
***Cylindrocapsa*, 60:254**
***Cymbella*, 60:254; 66:119; 74:254, 272; 82:22**
Cynipidae, 69:253
***Cynoglossus*, 78:94**
***Cynoperca canadensis*, 64:392**
***Cypris*, 59:209**
***Cynoscion*, 74:75; 79:139, 142**
***macdonaldi*, 67:258; 74:73**
***nebulosus*, 79:139, 141**
***regalis*, 63:306; 66:403**
***Cyprinella whippli*, 73:47**
***Cyprinodontes*, 66:367**
***Cyprinodon macularius*, 81:325**
***nevadensis*, 73:190**
***variegatus*, 81:325**
***Cyprinus carpio*, 59:110, 155; 61:132; 62:314; 63:210, 320, 379; 64:319, 374, 446; 65:61; 66:317; 68:259, 333; 69:71, 198, 220, 241; 70:61, 195, 384, 472; 72:187; 73:39, 41, 47, 87, 147, 180; 75:140, 175, 177, 314; 76:111, 114, 166, 209; 77:40, 57; 78:163; 80:50, 89, 100, 198, 235; 81:138, 219, 263; 82:104, 202, 214, 245, 256**
***Cyprinus erythrophthalmus*, 64:395**
***Cypselurus*, 78:94**
***Cystidicoloides hardwoodi*, 71:287**
***stigmatura*, 71:287**
Cystine, in trout diet, 60:144
***Cytophaga columnaris*, 74:23; 77:107**
***Cystopleura sorex*, 66:121**

D

Dace, propogation of, 61:132
effect of rotenone on, 69:154
Dace, blacknose, collected by shocker, 69:212; 81:66
effect of D.D.T., 75:50, 55
effect of pollution, 82:160
food of, 64:73
food of merganser, 66:337
forage ratio, 70:313
in Michigan trout stream, 81:227
in New York pond, 81:45
stream, 71:107
in stream, 68:285
Dace, fine-scaled, in Michigan lake, 70:144
parasites of, 70:164
Dace, horned, collected by shocker, 69:212
distribution in Illinois, 59:254
environment of, 59:253
food of, 64:73
food of merganser, 66:337
propogation, 64:94
Dace, longnose, collected by shocker, 69:212
in central New York stream, 71:107
in Manitoba, 75:330
population in Minnesota stream, 76:208
in Montana, 80:100
movement, Great Lakes, 81:290
Dace, northern, parasites of, 70:164
Dace, redbelly, forage fish in Canada, 63:59
food of pike, 80:80
in Michigan lake, 70:144
in Ontario waters, 59:259; 81:113
in small lake, 67:122
in trout stream, 76:250
life history, 65:141
parasites of, 70:165
propogation, 65:132
Dace, scaled spiny, in Nevada, 80:87
Dace, western, in Nevada, 80:87
***Dactylogyrus*, 69:97**
Dairy products, as hatchery food, 65:386
Dams, effect on bottom fauna, 78:70
effect on fishery, 78:43
effect on lakes and streams, 64:457
effect on Sockeye salmon, 60:244, 268
fish conveyor, 66:411
fishery problems, 71:301
fishery protection in, 78:216
fluctuations, damage to fish, 61:28
fresh water impoundments, 71:80
stream improvement, 64:64; 65:318, 328
passing fish over, 62:386
power, 71:324
resolution concerning, 71:52
Damselfly, effect of rotenone on, 68:271
food of bluegill, 69:246; 73:232
brook trout, 60:65, 127
cutthroat trout, 63:200
grayling, 69:246
largemouth bass, 66:253
ling, 69:195
rainbow trout, 65:126
smallmouth bass, 70:317
spotted bass, 62:187
trout, 71:109
yellow perch, 73:232
in bottom fauna, 60:187; 72:56; 73:200
lethal dosage of arsenic, 61:229
number in fertilized ponds, 59:99
***Daphnia*, 59:175, 191; 60:39, 49, 191; 61:85, 99, 109, 134, 172; 62:156, 167, 187, 297; 63:26, 56, 111, 129, 131, 164, 278, 339, 379; 64:132, 134, 152, 205; 65:309; 66:267, 287; 67:219-22; 68:239; 70:350; 71:361, 369; 72:137, 276; 73:247, 254, 386; 74:351; 75:60, 170, 328; 78:16, 18, 97, 100, 103, 105, 108, 110; 79:55, 58, 107, 149; 80:73; 81:126; 82:16, 22, 215**
***longispina*, 60:223; 62:309; 64:461; 66:125; 78:16, 100, 102, 109; 82:237**
***magna*, 62:157, 319; 63:103, 164, 392; 64:205; 66:287, 365; 68:239; 69:121; 78:96-113**
***pulex*, 62:319; 63:381, 387; 64:414, 464;**

65:64, 68, 108; 66:123, 287, 365; 70: 180, 224; 73:246; 78:16, 100, 103, 109
retrocurva, 63:380-90; 64:462; 67:216
thomsoni, 78:103
Darter, collected with rotenone, 80:37
environment of, 59:253
food of trout, 59:150
in T.V.A. waters, 71:203
Darter, blackside, food of pike, 80:69, 80
Darter, fantail, effect of D.D.T., 75:56; 76:318
food of sculpin, 66:375
in central New York stream, 71:107
in Illinois bass stream, 82:202
Darter, greensided, effect of pollution on, 82:160
Darter, Iowa, compete with bluegill fry, 76:195
effect of rotenone on, 70:82
food of pike, 80:69
in Michigan Lake, 70:144; 76:304
in small lakes, 67:122
mortality, 64:374; 76:27
oxygen threshold, 76:32
population study, 72:270
Darter, johnny, breeding, 63:55
effect of pollution on, 82:160
food of, 60:257
food of lake trout, 67:167
northern pike, 60:255
sucker, 60:254
in Illinois bass stream, 82:202
in Ontario waters, 75:330
mortality, 64:374
parasites of, 66:358
population in stream, 68:285
Darter, least, in Michigan lakes, 76:304
Darter, orange-throated, 82:160
Darter, rainbow, effect of pollution on, 82:160
in Illinois bass stream, 82:202
Darter, sand, food of, 60:257
Dasyatis sabina, 79:139
Deaths, list of, 59:41; 60:29; 61:35; 62:40; 63:49; 64:46; 65:47; 66:48; 67:39; 68:57; 69:60; 70:51; 71:58; 72:18; 73:10; 74:10; 76:8; 77:8; 78:8; 79:6; 80:viii; 81:viii; 82:8
Death rate and temperature, 74:355
Decline of fishes, turbidity as factor, 75: 281
Decapoda, in bottom fauna, 66:183; 72:56
food of largemouth bass, 66:253
pickerel, 60:228
Deceased members, resolution, 69:52; 71:54
Decodon verticillatus, 75:203
Decomposition, Algae, result of fertilization, 71:96
D.D.T., use, control, 77:303
effect of aerial application, 75:48
effect on salmon and trout, 77:160, 163, 169, 174
relative toxicity of formulations to fish, 76:315
symptoms of poisoning, 75:63
toxicity to brown trout, 75:59
use of, 78:215
Deerflies, food of brook trout, 60:66
Deflectors, angling changes due to, 76:268
cost, 76:258
description of, 61:53
effects on trout stream, 76:248
in Michigan streams, 63:406
stream improvement, 61:49; 65:318, 323
results of installation, 76:254
Delaware, legislation, 59:26; 64:97; 65:39; 71:27
DeLury population estimate, 82:48
Dendromonas virgaria, 64:447
Density, bottom fauna, 71:278
effect on growth, 72:72
population, 70:172; 73:220
trout, 73:209
Depletion, of aquatic resources, 60:279
definition, 76:283
east coast shad, 67:26
Great Lakes fisheries, 66:36; 69:33
trout population, 74:166
whitefish by trap net, 63:34
yellow pike-perch, 73:103; 77:33
Depth distribution, bluegill, 81:162
lake trout, 81:111, 115, 133
Derris, effect of, 70:350
as fish poison, 70:80, 143
method of application, 70:82, 349; 71: 187, 202, 268, 353
solubility, 70:352
Description, *Bacterium salmonicida*, 82: 130
Desmidium, 61:211; 82:22
Desmids, food of mosquito fish, 61:211
in water bloom, 71:115
Dextrin, in trout diet, 59:126; 60:129, 132, 133; 61:71
Diabrotica duodecim-punctata, 75:120
Dianthera americana, 68:331; 70:313; 75: 49; 78:64
Diaphanosoma, 59:99; 60:191; 63:278; 67: 219; 70:350; 75:170; 78:15
brachyurum, 64:462
leuchtenbergianum, 63:379, 383-90; 64: 462; 65:61-68
Diapterus linneatus, 74:76
Diaptomus, 59:99, 176; 60:191, 222; 63: 278, 379-90; 69:247, 248, 250, 253; 70:350; 75:328; 77:84; 78:16, 141; 79:149; 80:73, 76; 82:16, 22, 215
ashlandi, 63:384, 388
birgei, 69:153
claviceps, 66:123
minutus, 63:384, 386; 64:462; 65:108; 75:170
oregonensis, 63:379-89; 64:391, 461; 78: 101; 82:237
pallidus, 66:123
sicilis, 63:380, 384, 387, 388; 66:125; 67:222
siciloides, 63:379, 380, 384; 66:123
tenuicaudatus, 70:224
Diatoma, 63:387
vulgare, 66:122
Diatoms, effect of pollution on, 60:316
food of Hawaiian fish, 74:254
food of mayfly larvae, 63:178
in hatchery pond, 63:396
in Hocking River plankton, 61:204
in Lake Erie, 63:276
in water bloom, 71:115
Dibothrium cordiceps, 64:393
Dicamptodon, 82:149
ensatus, 82:148
Dichelyne, 68:265, 267
cotylophora, 68:266; 70:166
Dictyosphaerium ehrenbergianum, 66:119
pulchellum, 66:119, 122
Diet, acetone as solvent, 60:140
alcohol as solvent, 60:140
alcoholized spleen in, 60:133
alfalfa in, 60:132
Balto, in, 62:128
basic, in nutrition study, 65:363
bean meal in, 62:128
beef melt in, 60:147; 62:127
bone meal in, 60:129
brown trout, improvement of 77:74
buttermilk in, 60:155; 62:127
buttermilk powder, 63:341
carp in hatchery, 65:310

casein, 59:126; 60:129, 140; 63:341
cellophane in, 59:126; 60:127
cellulose, 59:126; 60:128, 137
cereals, 59:161
clam meal, 59:161; 60:147
cocoanut meal, 59:126
cod liver oil, 59:126; 60:129; 61:61; 62:127; 63:341
commercial feeds tested, 65:369
composition, trout, 74:83
Connecticut hatchery, 60:155
corn meal in, 63:341
cottonseed meal, 59:126; 60:131; 61:60; 65:310
crisco, 63:341
criteria of successful, 69:23
cystine, 60:144
dextrin, 59:126; 60:129
dog biscuit, 68:99
dried buttermilk, 59:161; 61:82
dry skim milk, 59:126; 60:131, 147; 61:60
egg albumin, 60:142
effect on body chemical composition, 61:74
effect on survival and growth, 65:153
ether as solvent, 60:140
factor H, 59:126; 61:61
fish meal, 59:126, 161; 60:131; 62:127
gelatin, 60:142
grapefruit juice, 63:341
growth rate under, 60:149
haddock in, 59:126
hatchery, 62:189; 64:438; 65:161, 80:142
heart, 60:127, 147; 61:61
herring, 62:127; 65:310
Hogan's salt mixture, 63:341
hominy feed, 60:133
horse meat, 59:168; 60:147
kidney, 61:61
Kinney's fry food, 62:128
lard, 60:129
linseed meal, 60:136
liver, 59:126, 161, 168; 60:127, 133, 136, 140, 147; 61:61; 62:127; 63:341
lungs, 59:126; 61:61; 62:127
mackerel, 62:127
milk, 62:127
mineral requirement, 61:61
nutritional requirements, brook trout, 63:167
Ontario hatchery, 60:140, 146
peanut meal, 59:126
polished rice flour, 63:341
pork melts, 62:127
protein, 59:126; 60:129, 141; 61:61
red dog flour, 59:126; 60:133
rainbow trout fingerlings, 79:94
relation to ulcer disease, 70:369
salmon byproducts, 65:165
salmon eggs, 59:168; 60:157
salmon fingerlings, 73:62
salt, 59:126; 60:129, 133, 141; 61:61
sheep plucks, 59:161; 62:127
shrimp bran, 62:127
shrimp meal, 59:161, 164
skim milk, 59:161; 65:310
smelt and salmon, 59:164
soybean, 59:126
spleen, 59:126; 61:61; 63:170
starch, 59:126; 60:129, 132, 140; 61:61
substitutes for fresh meat, 59:160; 68:96
sucker and carp, 59:165
tripe, 60:147
trout and salmon in New Hampshire, 64:155
Vermont hatchery, 60:156
vitamins, 59:126, 63:341
yeast, 59:126; 60:129; 61:61; 63:341
Difco nutrient agar, 73:35
Difflugia, 59:174; 66:124
Diguelia elliptica, 69:148
Dikerogammarus fasciatus, 63:120
limnaeus, 63:120
Dilleptus gigas, 64:447
Dimethyl phthalate, effect on salmon and trout, 77:163, 171
Dimorphococcus, 61:211
Dineutes, 60:192; 66:253; 70:320, 322; 75:53
Dinobryon, 65:107; 69:145; 70:350; 72:276; 75:328; 78:15, 135, 139; 82:16,22
divergens, 82:235
Dinoflagillates, effect of rotenone, 72:276
Dinomonas vorax, 64:447
Diplobacillus liquifasciens piscium, 62:153
Diplois daviesiae, 64:447
Diplopoda, 80:102, 105; 81:246
Diphyllobothrium latum, 64:391; 70:483
Diplostomum, 64:395
scheuringi, 69:271
Diptera, 59:175, 258; 60:65, 66, 192; 63:186, 199, 255; 64:432; 65:126, 127; 66:183, 197; 67:216-223; 68:190, 232; 69:195, 207, 246-54; 70:317; 71:107, 109; 72:56; 73:198-202, 238; 76:109, 112; 80:52, 78, 102; 81:123, 212-4, 235, 245, 249, 251-3; 82:21, 23, 24, 25, 28, 160, 216
Disc tag 71:228
Discocotyle salmonis, 61:189
Discretionary power, 71:27, 323, 339
Disease, air bladder, in lake trout, 66:359
bacterial, trout eggs and fry, 62:152
gill, control, 63:143
gill, 65:85; 74:81
black bass, 63:29
blood, in study of, 59:197
blood clots in gills, 66:369
in brook trout, 60:110; 66:343; 80:140
brown trout, 77:78
California bass hatchery, 69:123
carp, 81:221
cataract in trout eye, 63:170
channel catfish, 61:172
control of, with acetic acid, 65:92
chemicals, 63:158
in hatcheries, 62:114; 69:27; 74:209
with potassium permanganate, 65:88; 66:272, 369
costiasis, 65:332; 70:444
cyclochaetiasis, 61:107; 67:228
effect on respiration, 59:239
eggs, 62:394
fish, 60:185; 71:316
fungus, 70:264
furunculosis, see under Furunculosis
gill worm, 61:189
goiter, 59:164
of goldfish and carp, 64:176
grayling, 62:172
in hatcheries, 63:240; 64:138; 65:76
Ichthyophtheriasis, in Ohio ponds, 61:107; 62:159
infectuous, 74:21-25
investigation by Pacific Biol. Station, 62:249
irradiation treatment, 60:167
myxosporidian, in largemouth bass, 68:173
octomitis, 59:195; 63:172; 65:290
of Pacific Coast fishes, 62:249
parasites, in bait minnows, 59:198
in Centrarchidae, 68:263
new in bass, 69:169
treatment, 74:219
smallmouth bass, 66:272
sockeye salmon fingerlings, 61:129

smelt mortality, 74:320
treatment, acriflavine, 62:152
of ectoparasites, 59:200
radiation, 61:77
in Ohio hatchery, 61:114
simplified methods, 68:178
for *Octomitis salmonis*, 63:172
with acetic acid, 63:247
trichodinosis, 69:94
trout, 76:16
ulcer, 64:252; 68:136; 70:369; 73:34; 78:56
whitespot, 62:159; 63:245
Disinfectant, calculation of concentrations, 74:210
Disinfection of hatcheries, 74:26
Distribution, alewife, 64:118
bottom fauna, 64:240; 72:56
brook trout, 61:240; 62:332
brown bullhead, 62:332
channel catfish, 61:240
cisco, 62:332
common sucker, 62:332
croaker, 70:475
finescaled sucker, 62:332
fish, in New York Lakes, 62:331
freshwater shrimp, 60:89, 95
horned dace, Illinois, 59:254
kiyi, 74:143
lake trout, 62:332
ling, 62:332
longjaw cisco, 76:215
Mississippi river catfish, 61:240
mosquito fish, 61:208, 213
northern pike, 62:332
plan for Ohio, 61:110
plankton, in Quebec lakes, 64:461
pumpkinseed, 62:332
seasonal of bottom fauna, 64:242
silver mouthed minnow, Illinois, 59:254
size of fish, Indiana, 61:117
Reighard's chub, 72:108
rock bass, 62:332
smallmouth bass, 60:53; 62:332
smelt, 62:332; 66:160
trout, New Jersey, 62:127
trout, after glacier, 64:325
in T.V.A. Reservoirs, 75:65
walleye, 61:240; 62:333
whitefish, 62:332
yellow perch, 62:333
District of Columbia, legislation, 59:26; 64:97
Diurella, 66:123
Diversions, screened, 61:270; 71:304, 306, 311
Dobson fly, in bottom fauna, 72:57; 73:200
Dog Biscuits, in trout diet, 68:99
Dogfish, shark, zymogen granules in, 72:264
Dogfish, spiny, pharmacological investigations, 80:240
Dolichopodidae, 67:216, 219; 69:248
Donacia, 76:310
Donax serra, 77:75
Dorado, 74:77; 82:237
Dorosoma, 79:152; 80:60
cepedianum, 59:201; 64:374; 67:241, 279; 68:244, 247; 69:257; 70:195, 359, 360, 469; 71:203, 206; 73:39, 147; 75:118; 76:47, 53, 61; 77:57; 78:37, 66; 79:127, 147; 80:31, 37, 64, 208; 82:214, 245, 256
Dragonfly, effect of arsenic on, 61:144, 229
eliminated in ponds, 64:134
food of bluegill, 69:246
brook trout, 60:65, 73; 65:127; 66:345
cutthroat trout, 63:200
grayling, 68:190; 69:246
lake trout, 67:167
largemouth bass, 66:253
mooneye, 67:216
redhorse, 67:218
sculpin, 66:375
smallmouth bass, 70:317, 320
trout, 71:109
in bottom fauna, 60:187; 66:183; 71:170; 72:56; 73:200, 232
in Quebec lakes, 62:198
predator on smallmouth bass, 66:267
production in trout stream, 68:232
Drainage, influence on fish, 60:21
swamp, detrimental in Louisiana, 59:211
Dredge, Peterson, 71:167; 73:197
Drift foods, 81:212
Drosophila, 79:227
melanogaster, 79:113
simulans, 79:113
Drought, effect on Wildlife, 60:251; 64:57
Drugs, furunculosis treatment, 75:186
Drum, catch, 72:216; 73:39, 148, 150; 80:28, 30; 82:245
effect of vacuum, 70:469
food of burbot, 80:61
food of white bass, 82:214
in Lake Erie, 77:180, 197
in Manitoba, 79:22
in small pond, 79:123
population sampling, 80:30; 82:247
rough fish removal, 82:104
yield, potential, 71:67
Dryopidae, 76:310
Ducks, predation on trout, 66:338
Duckweed, effect of fertilizer on, 62:322
in Quebec, 64:465
growth in pond, 73:282
Dungeness crab, food value, 65:342
Dytiscidae, 60:66, 192, 230; 62:165; 63:255; 66:254; 69:247; 76:310
Dytiscus, 66:267; 69:122; 70:423; 74:272; 75:121, 128; 76:109, 112
dauricus, 76:112
harrisii, 76:112

E

Earthquake, re smelt mortality, 74:317
Earthworms, aquatic, effect of copper sulfate on, 69:145
effect of rotenone on, 71:187
food of bluegill, 73:232
brook trout, 60:73; 63:185
brown trout, 71:109
in bottom fauna, 72:56; 73:200, 232
Ecdyurus, 60:65
Echinorhynchus coregoni, 66:355; 81:94, 96-8
lateralis, 66:344
leidy, 66:354; 71:287; 81:94, 96
thecatus, 59:201
truttae, 66:355
Ecology, effect of fertilizer on ponds, 64:151
significance of wastes in, 79:217
of spotted bass, 61:89
Ecological classification, 74:266
Ectocarpus, 59:180
Ectoparasites, method of enumerating, 71:122
Edema, trout, 74:302
Education, need of public, 62:329
public, in Tennessee, 68:244
conservation, 71:317, 331
fishery conservation, 76:118
Eel, anabiosis, 62:340
catch in N. Carolina, 72:208
collect with shocker, 77:60

effect of copper sulfate on, 65:109; 69: 143
effect of rotenone on, 70:352, 358
in Des Moines River, 75:116
in France and Spain, 62:395
in Germany, 62:392
in New Brunswick, 75:167
in Nova Scotian lakes, 67:181
in Ontario, 81:115
in Prince Edward Island, 60:101
migration, 70:394
mortality, 75:175
parasites of, 70:167; 74:22
population of, 65:298
saltwater, nutritive value, 64:436
Eelcat, size of, 77:22
Eelgrass, in Quebec, 65:465
used by spawning herring, 64:307
Eel-pout, food of, 80:56
Effect, physiological, of sodium chloride, 74:297
Effective food grade, determination of, 70:313
Effective food grade, 70:324; 71:277
Efficiency factor, food utilization, 70:342
Efficiency, fishing gear, 70:385; 73:152; 74:237
Efficiency, tags for haddock, 71:228
Effort, catch per unit, 74:174
Egg albumen, in trout diet, 60:142
Eggs, of alewife, 64:118
artificial fertilization methods, 62:392
atlantic salmon, incubation period, 62:212
size of, 62:214
bluntnose minnow, 65:139
brook trout, collected in Quebec, 64:424
eaten by brook trout, 61:187
fertilization of, 62:345
loss in hatchery, 62:141
percentage fertilized, 64:347
purchased in Minnesota, 59:229
quality of, 60:112
survival of, 60:104
temperature effect on, 62:142
brown trout, effect of rotenone on, 68:277
effect of temperature on, 62:123
fertility of, 77:65
purchased for Minnesota, 69:229
bullfrog, number of, 61:264
carp, effect of pollution on, 63:282
channel catfish, 59:116
chicken, hatchery food, 67:267
chub sucker, 65:141
cisco, predation on 67:242
collection of, in Ontario, 60:45
count, methods, 70:267
definition, 71:291; 74:19
disease of, Costiasis, 62:394
disinfection of, 74:31
effect on growth, 64:197
effect of temperature on, 64:281
eyed, planted, 64:379
food of alewife, 64:121
brook trout, 60:85, 103; 63:195
bullhead, 60:232
burbot, 80:60, 65
channel catfish, 67:220
cisco, 67:242
rosyside sucker, 69:176
sand shiner, 67:223
sauger, 60:229
sculpin, 81:252
trout, 59:150
whitefish, 68:162
hatching period, channel catfish, 61:171
hatchery output, British Columbia, 61:165
increase in number of selective breeding, 60:109
lake trout, collecting of, 59:57, 229
destroyed by suckers and bullheads, 61:183
size of, 59:59
taking care of, 59:53
measurement, 74:19
mortality, 66:59; 81:91
muskellunge, 69:202; 64:313
number, Atlantic Salmon, 69:286
channel catfish, 61:171
chinook salmon, 70:63
herring, 64:308
pink salmon, 69:239
size of fish, 59:59
sockeye salmon, 60:262; 61:122
spotted bass, 61:92
steelhead trout, 64:335
whitefish, 60:220; 61:245
oyster, size of, 62:73
percentage fertilized, 62:314; 66:59
loss, 69:85
production of, 62:314; 71:350
Abramis brama, 62:314
Acipenser guldenstadti, 62:314
brown trout, 71:195
Caspialosa caspia, 62:314
Clupea harengus, 62:314
Coregonus clupeaformis, 62:314
Creek chub, 75:344
Cyprinus carpio, 62:314
Esox lucius, 62:314
Gadus callarias, 62:314
golden trout, 64:261
Huso huso, 62:314
lake trout, 63:64
Leucichythys nipigon, 62:314
ling, 69:194
Lota lota, 62:314
Molva molva, 62:314
Osmerus eperlanus, 62:314
Perca fluviatilis, 62:314
Pleuronectes flesus, 62:314
Psetta maxima, 62:314
rainbow, kamloops, 69:190
Rutilus rutilus, 62:314
Salmo salar, 62:314
Salmo trutta, 62:314
Solea vulgaris, 62:314
Tinca tinca, 62:314
walleye, 73:99
rainbow, produced for Minnesota, 59:229
redbelly dace, 65:141
salmon, changes in volume, 71:284
food of sockeye, 62:233
hatchery diet, 59:168; 67:269
reared in gravel, 69:132, 135
salmon and trout, effect of silt on, 69:226
sockeye, eyed, planted with success, 61:124
dried, food of salmon and trout, 62:190, 233
smallmouth bass, effect of temperature, 75:43
loss, 75:46
smelt, planted, 64:432
spawning advanced by hormone, 65:270
sterilization of, 71:316
time of development, in Brazil, 65:270
transfer to South America, 71:35
treatment with potassium permanganate, 64:304
trout, bacterial disease, 62:152
predation on, 59:266; 62:246
walleye, effect of pollution on, 63:282
taking of, 66:277

waste of, 62:245
whitefish, determination of fertility, 63:144
effect of temperature on, 63:144
effect of pollution on, 63:282
fertility, 60:220; 61:205
fertilized, 62:293
incubation, 60:221
not in sucker stomach, 60:231
predation on, 60:221
Egret, Calif., predation in bass hatchery, 69:123
Eichornia crassipes, 82:17
Elakatothrix, 66:119
Elasmobranchii, 72:263
Elassoma, 79:147
Elateridae, 63:255; 66:197; 69:247; 76:111
Electracide, at fish hatchery, 65:259
Electric apparatus, fly killing, 59:22
Electrical categories of streams, 70:404
Electrical, cost of operations, 70:406
Electricity, control of garfish and carp, 61:174
effect on fish, 61:174
effect on trout, 77:61
effect on turtle, 61:176
Electrical methods of fish collecting, 69: 210; 70:404; 73:212; 76:205, 253; 77:49, 50
Elephant Butte reservoir, 71:81
Elcocharis acicularis, 75:203
Eliotris fuscus, 74:267
Elliptio, 70:321
complanatus, 68:325
Elmidae, 67:221; 73:202
Elmis, 60:66; 75:121, 128
Elodea, 59:177; 66:182, 67:117; 77:196
canadensis, 64:464
occidentalis, 61:146
planctonii, 65:124
Elophila, 70:317, 321; 80:102, 105
Elops, 74:252
machnata, 74:250, 267
sauras, 79:142
Emboli, gas, due to oxygen supersaturation, 71:113
Emergence of adult insects in winter, 81:210
Empididae, 69:248; 73:202
Employment and professional standards committee, report of, 81:336; 82:329
Enallagma, 59:259; 65:66, 67; 69:247; 76:310, 312; 79:149; 82:30
carunculatum, 68:191
hageni, 68:191; 69:248, 250
Enchelvopus cimbrius, 62:125
Encyclops, 66:364
Enneacanthus gloriosus, 68:267
England, impounded reservoirs, 66:85
English system, vs. Metric system, 75:157
Eniococephalidae, 69:248
Enochrous, 75:120
Enteritis, catarrhal, 70:297
treatment of, 70:300
Enteromorpha, 59:182; 74:252, 254; 265
Entomostraca, 60:50, 187; 61:201; 64:176; 65:131; 69:246; 76:305; 80:52, 67; 82:22, 26, 215, 237
Entosphenus, 76:208; 82:149
lamottenii, 68:285; 70:82; 76:148, 165; 81:289
tridentatus, 81:289; 82:148
Environment, changing Clinch River into trout stream, 68:228
control, 73:282
need for control of, 64:364
need for winter study, 65:51
preference of fishes, 59:253
suitable for fish, 65:244
Eopsetta jordani, 69:107
Ephemera, 60:65, 105; 70:315, 317, 320, 322, 331
Ephemerella, 60:65, 81, 192; 63:178; 70: 317, 320, 322; 75:53; 77:162, 168; 80:73, 104
bicolor, 69:250; 70:243
coloradensis, 81:252, 253
doddsi, 81:252, 253
grandis, 81:252, 253
invaria, 70:243; 71:220; 72:36
simulans, 69:247-53; 76:310-3
subvaria, 70:243
temporalis, 76:310
Ephemerida, 59:175; 60:192; 63:199; 65: 63, 66, 67; 65:126, 127, 131; 67:216-23; 71:170-5
Ephemeridae, 60:224, 228; 63:378; 63:255, 380, 388, 389; 70:352; 76:109, 113;
Ephemeroptera, 59:259; 60:65; 66:183; 68: 190, 232; 69:195, 207, 246-54; 70:241-6; 71:107, 278; 72:56, 141; 73:200-2, 233-42; 80:52, 78-9, 101-6; 81:115, 120, 124, 214, 235, 245-7, 249, 251, 252-3; 82:15, 21, 23-5, 27-8, 204-9, 216-7
Ephoron, 63:380, 389; 67:220; 70:326; 75:120
Ephydridae, 65:66; 67:219
Epiaeschna, 76:112
Epicordulia princeps, 76:310
regina, 79:149
Epinephalus, 74:75
Epeorus, 60:65, 81
Epischura, 62:297; 67:220, 221; 70:350; 75:170, 328
lacustris, 61:201; 63:379-84, 386-90; 64:462; 65:108; 67:218
nevadensis, 64:462
Equipment, aerating device, 69:296
bottom sampler, 66:195
feeding dipper, 65:308
fish conveyor, 66:411
fish grader, 65:313; 68:170
floating bass-broods, 64:143
hydrographic bottle, 62:342
lobster rearing, 62:84
transportation of trout, 68:344
trout hatchery, 70:430
under water plant cutter, 64:375
Equisetum hiemale, 64:466
Ergasilus, 59:176
caeruleus, 63:223; 70:162, 163, 170
centrarchidarum, 63:223; 68:265
Ericymba buccata, 59:252; 73:47; 82:160
Erimystax, 75:126, 133
oblongus, 75:50, 55; 76:316, 318; 82:199
succetta, 64:374; 65:61, 132; 71:185; 72:178, 270; 76:27-30, 32; 78:83
Eriocera, 60:81; 66:375; 70:321
Eriocaulon, 67:179; 69:145
articulatum, 62:198
septangulare, 64:465; 75:167
Eriscion reticulatus, 67:258
Eristalis, 60:81
Erosion, cause of depletion Mississippi River fisheries, 60:279; 64:328
control, in Minnesota, 71:338
of bank, 75:274
menace to water supply, 62:370
menace of, 63:76
relation to turbidity, 75:317
Error, in mortality estimate, 77:118
Escapement, salmon, 71:302
Esox, 76:337
americanus, 69:268; 78:39
lucius, 59:110; 60:216, 230, 255; 62:314, 323, 332, 377; 64:392, 396; 65:212, 262; 66:372; 67:241; 68:163, 356; 69:

268; 70:195; 71:112, 286; 72:187, 263; 73:19, 29, 76, 87; 75:20, 116, 175, 237, 241, 254, 326, 330 333; 76:27, 29, 32, 112, 165; 77:15, 86; 78:131, 146, 163; 79:20, 169, 191, 196; 80:50, 67; 81:10, 181, 325; 82:35, 221
masquinongy, 75:20
immaculatus, 65:262; 77:42, 47
masquinongy, 65:262; 70:421; 77:42; 82:35
chiocnsis, 68:244; 77:42, 44, 48
niger, 65:262; 68:244; 69:268; 70:352; 71:203, 206; 73:39, 147; 75:50; 76:316, 320; 78:39
vermiculatus, 64:373, 446; 66:372; 68:259; 72:178, 208, 270; 75:205, 222; 76:27, 29, 32, 113, 304; 78:68; 82:202
Estheria mexicana, 60:224, 235
Etheostoma blennioides, 82:160
Etheostomidae, 59:150
Etheostomatinae, 76:109, 112
Ether anesthesia, 70:272; 72:26
Ether, solvent in trout diet, 60:140
Etroplus, 78:94
Etropus, 79:141
Euastrum, 61:211; 69:146, 82:22
Eubothrium crassum, 64:396
salvelini, 66:344; 71:287
Eucalia inconstans, 59:258; 60:66, 216; 66:357; 67:122; 68:271, 285; 70:82; 75:330; 76:109, 112, 114, 250; 79:20; 80:69; 81:290
Euchlanis, 73:244
dilatata, 66:124
Eucranyonyx gracilis, 60:89
Eucyclops agilis, 63:222; 65:108
prasinus, 65:108
Eucylogobius newberryi, 69:180
Eudorina, 61:211; 82:22
Euglena, 66:119; 79:107
Eulamia, 74:73
Eupanopeus herbstii, 64:158
Euparyphus, 75:121
Euphylax dovii, 74:78
Euplotes, 69:180
charon, 64:447
Europe, pond fertilization in, 76:335
Eurycea bislineata, 60:84; 64:71
Eurycerus, 60:187; 80:73, 76
lamellatus, 61:201; 65:61, 63, 65, 66, 67; 67:218
Eurypanopeus depressus, 64:158
Eusicyonia affinis, 73:317
alliaffinis, 73:317
brevirostris, 73:315, 317
carinata, 73:318
disdorsalis, 73:318
disedwardsi, 73:317
disparri, 73:316
dorsalis, 73:316
edwardsi, 73:315
ingentis, 73:318
laevigata, 73:215, 316
parri, 73:315
penicillata, 73:317
picta, 73:318
stimpsoni, 73:317
Eustrongylides, 68:265, 266; 70:163
Euthynnus alletteratus, 81:325
Eutrophication, by silt and municipal sewage, 81:139
Evaluation, fishing gear, 73:152
Evathrus colossus, 75:120
Excretion, salt, 74:297
Excuviae, 64:138
Exoglossum maxilligua, 76:111
Exosphaeroma oregonensis, 69:180
Exostoma, 78:94
Exotic fish, Nevada, 73:173; 80:84
Expenditure classification, hatcheries, 80:149
Experiments, California steelhead, 64:248
Exploitation, effect on mortality rate, 77:38, 127
extent, smallmouth bass, 80:202
spotted bass, 80:200
white bass, 80:2
black crappie, 80:2
white crappie, 80:2, 202
walleye, 80:202, 82:39
Extermination, definition of, 76:287
Extrarius aestivalis, 75:126, 133

F

Factor H, 59:126; 61:61; 63:169, 339; 64:437; 65:170; 66:291, 293
F.A.O., report on, 77:306; 78:224; 79:268; 80:336; 81:311
work of, 78:218
Fallfish, effect of D.D.T. on, 75:50, 55; 76:316
effect of rotenone on, 69:154
food of brown trout, 71:107
smallmouth bass, 70:313, 317
in bass stream, 68:331
migration, 70:393
parasites of, 71:286
spawning of, 64:458
Fall planting, 71:259; 73:158
Farming methods, shellfish, 71:63, 70
Fasciola hepatica, 73:65
Fasting, computation of weight loss, 70:293
effect on rainbow trout, 70:290
Fat, content in trout, 68:316
digestion by brook trout, 65:361
in fish meal, 64:295
in trout body, 61:74
in trout diet, 63:171
Feathers, food of rainbow, 64:342
Fecundity, Atlantic Salmon, 69:286
channel catfish, 61:171
chinook salmon, 70:63
cisco, 67:243
pink salmon, 69:239
pacific herring, 75:72
relationship to age and length, 59:59; 75:72
sauger, 79:34
smelt, 66:141
sockeye salmon, 60:262; 61:121
spotted bass, 61:92
steelhead trout, 64:335
yellow perch, 79:39
walleye, 73:99
whitefish, 60:220; 61:245
Federal aid in wildlife restoration, 70:47; 71:38, 309, 330, 345
Feed, calculation of amount for trout, 65:372
Feeding, artificial, whitefish fry, 70:180
salmon, 73:62
Feeding experiments, sockeye salmon, 70:339
Fertility, eggs, brown trout, 77:65
whitefish, 61:205; 63:144
Fertility, natural ponds, 73:256
Fertilization, artificial methods, 62:392
brook trout eggs, 62:345; 64:347
controlling plant growth, 71:94; 76:183
dispersal of substances, 65:184
effect on oxygen, 64:181, 408
eggs, percent of, 66:59
lakes, 71:369; 72:211; 82:223
Michigan lakes, 78:145; 82:78
New Brunswick lake, 75:165
Ontario lakes, 78:133

ponds, 65:132, 184; 71:165, 341, 359; 72:64, 223
bass ponds, 60:36
central Europe, 76:335
experimental ponds, 80:211, 219
Fairport Biological Station, 59:87
hatchery ponds, 59:209; 61:117; 64:128, 129
minnow ponds, 61:133
Missouri farm ponds, 82:281
New Brunswick ponds, 62:317
research on, 76:352
walleye ponds, 73:253
Fertilizer, amount per acre, 61:133
application, 60:49-51; 75:167
commercial, in bass culture, 63:110
composition of, 74:342
control of weeds, 70:364
cottonseed meal, 64:129; 72:224
effect on bluegill production, 69:257
effect on chironomids, 63:104
effect on duckweed, 62:322
effect on growth, 70:335
effect on oxygen, 62:318
effect on plankton production, 59:94; 62:318; 64:151; 69:257
effect on plant growth, 73:377
effect in ponds, 64:151; 68:313; 69:101; 70:336
for daphnia culture, 63:134; 64:207
herring meal as, 62:317
horse manure in hatchery pond, 61:117
increasing food in ponds, 68:126
inorganic, 72:97, 224
organic, 72:97,225
role in pondfish, 63:103
saltwater mussels as, 62:317
sheep manure in hatchery pond, 61:117
superphosphate, 64:129
types used, Fairport Biological Station, 59:95
wood yeast as, 79:105
Filinia longiseta, 66:123
Fin clipping, King Salmon, 77:132
lake trout, 77:129; 80:260
method, 74:362
sockeye salmon, 61:126
Fin regeneration, 62:231; 77:132
Fin rot, control, 63:161
identification, 70:379
loss from, 76:16
similar to columnaris disease, 73:34
Fingerling, counter, 64:270
definition, 71:291; 74:19
diet of, 59:161
loss in weight, 70:290
planting of, 59:227
loss of in ponds, 59:87
production in ponds, 59:88
Fingerlings, bass, production in ponds, 59:88, 113; 64:130, 137
brook trout, food of, 60:67
octomitis in, 59:195
results of planting, 79:77
brown trout, 75:147
lake trout, planting experiments, 59:84
largemouth bass, arsenic content, 61:150
fertilizer experiments, 63:110
oxygen consumption, 63:208
production per acre, 60:51
range of pH tolerance, 61:217
raising of in Ontario, 60:46
tapeworms in, 63:114
trap for, 59:118
muskellunge, planting of, 59:203
rainbow trout, tests on, 79:94
salmon, diet of, 73:63
smallmouth bass, food of, 68:330
predation on, 66:267
range of pH tolerance, 61:217
sockeye salmon, disease of, 61:129
planting in Cultus Lake, 60:116
survival of planting, 66:126
transporting of in Ontario, 60:43
trout, color of new planted, 62:134, 137
food habits of planted, 62:134-8
percentage loss, hatchery, 69:85
planting from circular pools, 62:133
rearing in circular pools, 60:121
Fish and Game, relation to flood control, symposium, 76:359
Fish and Wildlife, relation to navigation and flood control, 77:253
Fish and Wildlife Service, creation of, 70:70, 340
Fish, abundance in streams, 59:252
anabiasis in, 62:340
chemical analysis of, 62:392
chemical factors influencing production, 68:303
collecting with electricity, 77:49
commercially important, India, 78:94
concentration of arsenious oxide needed to kill, 61:143
consumption of oxygen by, 63:216
decrease in, by pollution, 60:311
depth distribution in N. Y., 62:331
distribution in Ohio, 61:110
effect of arsenic on, 60:270
effect of carbon dioxide on, 61:220
effect of copper sulfate on, 65:109
effect of crude oil on, 65:324
effect of drought on, 64:57
effect of electricity on 61:174
effect of high oxygen concentration on, 61:218
effect of sudden change in pH, 61:216
effect of pollution on, 60:300
effect of pressure on, 61:219
effect of rotenone on, 69:148
effect of salt water on, 64:82
effect of sewage effluent on, 64:443
effect of tags on, 63:319
environment preference, 59:253
estimate of daily food consumption, 65:288
estimating population in stream, 69:231
factors causing mortality, 67:271
food of alewife, 64:121
brook silverside, 67:219
brook trout, 64:73
Buckeye lake, 65:57
bullhead, 60:232
catfish, 60:232
cutthroat trout, 63:200
grayling, 69:246
lake trout, 60:232
ling, 69:195
pickerel, 60:228
pike, 60:231
northern pike, 60:255
sauger, 60:229
smelt, 66:140
trout, 59:146
walleye, 60:258
yellow perch, 60:230, 258
frozen, mortality, 62:340
hatchery food, 65:384
immature, conservation of in otter trawling, 62:57
in Quebec lakes, 62:198
interrelationships between aquatic plants and sunlight, 62:278
marine, food of, 59:178
native game fish of Manitoba, 62:377
movement in Iowa lake, 66:98
number per acre, 59:251

packaged, production of, 61:24
parasites of, 61:201; 64:390
passing over high dam, 62:386
production in Lake Michigan, 59:188
in Minnesota ponds, 66:116
quantity needed to obtain lethal human dose of arsenic, 61:159
salvage, Mississippi river, 60:282
size, affected by electricity, 61:182
small, food of, 60:158
specimens, container for, 60:250
temperature of, 63:216
warm-water, effect of high oxygen concentration on, 62:267
tagged, 63:326; 67:211
transporting, aerating device, 69:296
Fish culture, in Argentina, 69:282
atlantic salmon, 62:211
bass in Arkansas, 61:83
in Ohio, 62:156
in New Jersey, 62:167
bluntnose minnow, 63:54
brook trout in Mexico, 67:94
channel catfish, in Oklahoma, 61:171
circular pool management, 63:139
coarse fish problem, 64:318
commercial fish, 60:21; 71:26
coarse of training, British Columbia, 61:164
culturist's school, Leetown, W. Va., 71:331
effect of gravel in raceway, 66:283
effect of temperature, 62:119
evaluation of trout, 69:85
fathead minnow, 63:55
forage fish, 63:53
practice in Germany, 62:391
golden shiner, 63:53
grayling, in Vermont, 62:171
hatchery fry in gravel, 66:279
Hawaiian, 59:181
history, Minnesota, 59:224
Ontario, 60:45
Lake Superior region, 59:56
lake trout, 63:64
largemouth bass, 60:48
in Indiana, 61:116
in Louisiana, 59:207
in Manitoba, 60:119
in Maryland, 61:80
mechanical devices, 62:179
methods, 59:235
Minnesota, 61:240; 66:116
muskellunge, 59:202; 64:313
natural enclosures for smallmouth bass, 67:94
origin in Canada, 67:88
origin in U. S., 67:88
past and future, 67:87
painting of troughs, 60:124
Philippine Islands, 59:181
pond fish, Fairport Biological Station, 59:86
pond problems, 63:391
predator problems, 64:318
primitive people, 59:181
products, classification, 71:290
measurement, 71:292
propogation of walleye, Minnesota, 59:228
progress in, 62:114
in Quebec, 62:224
rearing blackspotted trout, 60:164
recent developments, 68:234
research in Canada, 62:261
in Saskatchewan, 60:119
sockeye salmon in British Columbia, 60:265
spotted bass, 62:185
standard terms, 74:19
status in Ontario, 60:33
trout, in limited water supply, 61:139
in Michigan, 59:234
use of sloughs in, 59:106
walleye, Manitoba, 66:277
Fish Culture, Division of, Report, 59:21; 60:16; 61:18; 64:28; 65:35; 66:32; 67:24; 68:22; 69:23; 70:26; 71:22; 76:298; 77:289; 78:211; 79:245; 80:351; 81:314; 82:315
Fish farming, in Israel, 81:218
Fish food, availability, 71:275
effect of D.D.T., on, 75:48
effect of weed control on, 71:99
Fish grader, 65:313; 68:170
Fish ladder, 66:411; 71:302; 73:416
Fish meal, composition of, 61:65
made from ling, 60:201
nutritive value of, 64:293
in trout diet, 59:126, 162; 60:131; 62:127; 65:161; 71:363
Fish populations, elimination, 75:139
Fish preservation, 66:429
Fish production, potential, 71:61
per acre, 78:165
Fish resources, non-game, Utah, 71:138
Fish salvage, 71:369
Fish stocks, definition of depletion, 76:283
Fish stocking policies and programs, 71:343
Fish trap, 80:28, 38, 52
Fish tissue broth, 73:35
Fishway, Barr, cost of, 61:254
description, 61:250
in Wisconsin, 71:317
Fishways, in Canada, 60:240
Columbia River, Construction of, 78:52
in Iowa, 71:319
Maryland, 62:48
Minnesota, 59:230
over high dams, 62:386
Fisheries, Boston sales, 70:89
Bureau of, consolidation of, 70:70, 340
Chesapeake Bay, 62:43
commercial, for bass, 62:363
cisco, 62:100
code for, 64:33
drag-net fishery, 69:106
fluctuations in abundance, 61:27
legislation, 62:100
in Louisiana, 62:333
management of, 69:33
production of, 61:23
production of in Canada, 61:25
questionnaire on, 64:107
regulations, 77:302
technological research, 66:37
trap nets, 62:100
use of factory ships, 66:427
development, Columbia river, 78:42
Great Lakes, 65:71; 66:36
international control of, 69:39
management, 66:131
statistics, 63:292
status of, 59:45
future, Argentina, 69:283
lake trout, 76:139; 80:278
legal history, 78:232
India, status of, 78:91
investigations, Brazil, 65:267
state and national cooperation, 65:246
prairie provinces, 60:215
T.V.A., 68:61
management, 66:51, 81:197
fresh water, 68:67

Great Smoky Mountains National Park, 68:86
Manitoba lakes, 79:27
new fields, 67:105
Ohio program, 67:114
small Michigan Lakes, 67:120
Marine sport, California, 69:111
missions, reports on, 78:200
Ph.D., in, 81:1
problems in British Isles, 66:383
reservoirs, 66:63
program in Tennessee, 68:240
trends, 76:13
T.V.A., 66:398
protection, relation to dams, 78:216
Puerto Rico, 70:95
regulations in Mexico, 67:43
research, in Ohio, 61:199
summary of, 63:257
sea, history of, 66:427
shrimp, developments in, 82:152
sport, 77:301
statistics, California, 62:94
survey, Upper Mississippi River, 76:279
technology, Philippine Institute of, 79:213
trends, Lake of the Woods, 77:13
Upper Mississippi, future of, 64:328
whitefish, Lake Winnipeg, 65:272
Fishery Advisory Committee, 70:70
Biology, education for, 70:128
commercial, Division of, report, 60:18, 61:23; 62:32 63:31; 64:32; 66:34; 67:26; 68:27; 69:28; 78:217; 80.352; 81:323; 82:320
compact, Atlantic States Marine, 71: 323, 330
investigations, status, 71:24
legislation, new, 71:27
programs, administration, 71:315
regulations, great lakes, 71:316
Maryland, 71:144
cooperative, 66:35
market news, 70:87
products, new, 63:32
refrigeration, 70:260
Fishing, chub nets, 59:65
effect on trout mortality, 63:238
effect of overfishing on northern pike, 62:329
effect of pollution, 63:280
effect of weather upon, 64:383
effort, 71:63, 236; 80:13, 15, 18, 21, 47, 296, 300, 303
grounds extension, 71:63
intensity control in Maryland, 71:144
trout stream, 74:169
Florida, history, 78:39
history, in prairie province, 60:216
industry, Mexico, 67:256
in Kankakee River, Indiana, 59:206
in Sacandaga Reservoir, N.Y., 61:140
industry in prairie provinces, 60:215
intensity, 72:103, 246
Lake Huron, hook, 59:63
Lake Michigan, hook, 59:63
Lake Superior, hook, 59:63
liberalized, results of, 78:64
measurement of gear mesh, 63:31
pressure on test stream, 65:231
rate, 70:176
recreational value, 78:39
selectivity, various gear, 78:168
special regulated stream, 68:359
sport in Maryland, 66:403
success, effect of moonlight, 63:52
summer and winter comparison, Michigan, 66:87
trolling, commercially for lake trout, 59:58
types of, 67:133
vessels, number in India, 78:92
waters, creation of, 75:275
Flagfish, food of, 82:22
Flatfish, tagging, 73:321
Flatworms, feeding habits, 63:56
freeliving, 71:222
in bottom fauna, 72:57; 73:200
parasite in minnows, 69:273
Flavor, wild and reared trout, 75:183
Flies, food of bluegill, 69:246
brook trout, 63:194
brown trout, 71:109
cutthroat trout, 63:199
grayling, 68:190; 69:246
mooneye, 67:216
rainbow trout, 63:255; 66:197
production in trout streams, 68:232
in bottom fauna, 66:183; 73:200
Fly, bulldog, predation on whitefish fry, 70:182
Flood control, 62:372; 71:300
act, 76:362, 366
legislation, 71:29
relation to fish and game, symposium, 76:359
relation to fish and wildlife, 77:253
Floods, danger of, 62:371
Florida, fisheries management, 78:38
legislation, 59:26; 62:27; 64:97; 65:37
shrimp catch, 62:108
Flounder, food of kingfisher, 76:111
potential yields, 71:65, 66, 68
production of, 61:24
investigations on, 69:32
Flounder, fringe, in Texas waters, 79:141
Flounder, fourspot, name change, 81:325
Flounder, Georges Bank, name change, 81:325
Flounder, sand, aged by otoliths, 80:175
Flounder, starry, in coastal lagoon, 69:180
Flounder, summer, name change, 81:325
Flounder, witch, name change, 81:325
Flounder, yellowtail, name change, 81:325
Flour, hatchery food, 67:264
red dog, in trout diet, 59:126; 60:133
rice flour, in trout diet, 63:341
Fluctuations, abundance of fish, 70:193
causes of, 70:206
growth rate, 73:96
lake trout fishery, 75:24
population, tullibee, 73:126
temperature, 70:392
Flukes, in brook trout, 66:344
in Ohio fish, 66:357
in Ontario fishes, 70:165
in salmon, 64:394
parasites in fishes, 68:263
Fluminicola seminalis, 64:241
Flyfishing, census, 73:55
Flying fish, in India, 78:94
Fontinalis, 64:467
Food habits, bluegill, 73:231
brook trout, 62:142; 70:230; 71:219
brown trout, 61:106
channel catfish, 75:134
chars, 72:86
flatworm, 63:56
gars, 70: 356
golden shiner, 62:117
Hawaiian pondfish, 74:250
largemouth bass, 66:242
mud pickerel, 66:373
muskellunge, 64:315; 70:425
spotted gar, 82:17
trout, 62:134, 138; 65:381; 76:301
walleye, 73:244

white perch, 72:136
yellow perch, 70:436; 73:231
Food, analysis of, 64:435
artificial food of sockeye salmon, 62:228
brine shrimp for fish, 63:129
canned in carbon dioxide, 61:66
chain, in fishes, 59:174; 74:250, 262; 82:30
Chironomidae as fish food, 59:153
composition of (table), 65:397
conversion, in brook trout, 65:366
factor, 68:102
lake trout, 65:366
largemouth bass, 80:154
cost of, hatchery, 64:161, 172
daily consumption, 62:308; 65:288
development in new impoundment, 62:275
dry, preparation of, 61:64
effect of crowding on amount consumed, 63:26
effect of temperature on consumption, 62:202
factors influencing production in streams,67:246
determination of grade in streams, 68: 336; 70:313
effective, 70:324; 71:277
organisms, 71:220
preference, 71:226
Food, of fishes, 59:188; 60:253; 67:215
alewife, 64:121
atlantic salmon, 65:153
bass, 60:49; 61:85, 99
black bullhead, 65:58
black crappie, 63:387; 79:145
blacknose dace, 64:73
bluegill, 65:59; 69:244; 80:199
bluntnose minnow, 65:57
brook silverside, 65:59
brook trout, 59:146, 259, 262; 60:64, 73, 103, 105; 63:182; 64:73, 340; 65:153; 78:20, 23
brown bullhead, 60:255
brown trout, 59:146; 81:202, 213
bullfrog, 61:264
bullhead, 60:232; 64:74; 80:51
burbot, 60:199, 258; 62:309; 67:155; 69:195; 80:56, 168
carp, 64:450; 65:57; 80:51
catfish, 60:232; 73:366
channel catfish, 61:116, 172; 65:58; 67:220; 75:119; 80:199
chub sucker, 65:57
cisco, 67:242
common shiner, 60:254
cutthroat trout, 63:198; 81:235, 245
daphnia, 66:287
garpike, 59:158
gizzard shad, 65:61
goldfish, 62:157
golden shiners, 59:184; 60:254; 63:383; 65:57
goldeye, 60:224, 309
grayling, 62:172; 69:244
horned dace, 64:73
johnny darter, 60:257
kamloops trout, 60:247
lake shiner, 63:388
lake trout, 60:232; 61:187; 67:155; 68: 19, 23; 81:111, 120, 121, 133
largemouth bass, 59:184; 60:256; 65:59
Leucichthys, 60:222
log perch, 60:258; 63:385; 65:60
longnose sucker, 78:21, 23
mayfly larvae, 63:178
mergansers, 66:336
millers thumb, 60:258
mimic shiner, 67:222
minnows, 61:134
mooneye, 62:378; 67:215
mountain whitefish, 78:18, 23
mosquito fish, 61:208
muskellunge, 59:203
pickerel, 60:228
pike, 60:231
northern pike, 60:255; 66:373; 80:67
pumpkinseed, 60:256; 65:59; 67:217
rainbow trout, 59:146; 62:139, 199; 63: 255; 64:342; 66:197; 78:18, 23; 81: 202, 213
redhorse, 60:254
rock bass, 60:256
sand darter, 60:257
sand shiner, 67:222
sauger, 60:229
sculpins, 66:374; 81:249
sheepshead, 63:389
silver chub, 67:217
smallmouth bass, 68:320; 80:199
smelt, 66:139; 78:179
spottail minnow, 67:221
spotted bass, 62:187; 80:199
spotted gar, 82:13
striped bass, 66:225; 67:81
sturgeon, 60:227
suckers, 60:231
tadpole catfish, 65:58
trout, 59:266; 61:60
troutperch, 60:255; 63:382
walleye, 60:258; 61:187; 63:390; 80:199
white bass, 63:380; 65:60; 82:213
white crappie, 60:256; 63:386; 65:59; 80:199
whitefish, 60:219; 63:381; 68:152
yellow perch, 60:229, 258; 63:384; 65: 60
yellowstone whitefish, 80:99
Food, hatchery, 61:81; 62:116; 67:262
limiting factor, kamloops production, 60:247
natural increased by fertilizer, 68:126
nutritional requirements, 63:167
organisms, effect of rotenone, 72:283
ponds, 62:157
problem of type to feed in hatchery, 59:268
production in impoundments, 63:269
quantitative analysis, 60:158
quantitative studies following stream improvement, 66:181
requirement ratio, 73:188
source for marine fishes, 59:178
survey of kinds used in hatcheries, 65: 376
technology, 70:72
type used in rearing ponds, 59:237
use, compared with availability, 80:75
utilization, 70:339
value of crabs, 65:347
value of plant and animal by-products, 59:126
waterfleas, 63:131
Forage fish, chubsucker, 63:60
culture, 63:53
developed in new impoundment, 62:275
fate of, 64:93
gizzard shad, 63:57
golden shiner, in hatchery pond, 62:114; 64:130
improving trout diet, 77:75
in smallmouth bass streams, 68:331
loss due to careless handling, 64:93
minnows, 61:134
propogation, 65:132
ratio, 71:275
survival, 67:127
in T.V.A. reservoir, 71:349

walleye ponds, 73:252
Forage ratio, 70:313
Foraminifera, 74:255
Foreign relations, committee, report of 59:31; 60:22; 63:20; 64:20; 65:22; 66:24; 67:22; 68:34; 69:39; see also International Relations
Formicidae, 63:255, 388; 66:197; 67:216; 69:248, 251; 76:109; 80:102, 105
Formaldehyde, in disease treatment, 63: 172
Formalin, in disease treatment, 67:230; 68:180; 69:94; 70:445; 71:219
Formula, Schnabel, 81:4, 13
Schumacher and Eschmeyer, 71:4, 13, 14
Fragilaria, 65:107, 118; 78:135; 82:22
capucina, 66:119
crotenensis, 63:396
mutabilis, 66:119
France, eels, in, 62:395
Freshets, action on fish, 75:257
Frog, bull, effect of D.D.T., 75:58
food of bullhead, 80:52
kingfisher, 76:109, 111
merganser, 66:336
spotted bass, 62:186
Oregon red-legged, 82:148
Frontonia leucas, 64:447
Fry, atlantic salmon, 62:217
brook trout, food of, 60:67, 105; 62:142
mortality of, 60:172
channel catfish, food of, 61:116
creek chub, 75:347
counter, 64:270
definition, 71:291; 74:19
growth of muskellunge, 64:316
growth rate, smallmouth bass, 60:57
kamloops trout, stocking, 62:149
cost of, 69:190
lake trout, distribution, 59:57
largemouth bass, average number per nest, 64:132
habits of, 60:48
range of pH tolerance, 61:217
production, 64:144
raising of, Ontario, 60:46
trap, 59:118
migration of pink salmon, 69:238
mortality of, 62:315
muskellunge, planted, 59:203
handling of, 64:314
pickerel, food of, 60:228
pike, success of planting, 59:232
planting of, 60:116, 119; 71:118
production from planting eyed eggs, 64:379
per nest, 71:357, 365
smallmouth bass, collecting of, 61:114
food of, 68:330
growth, 67:101
range of pH tolerance, 61:217
production, 72:236
sockeye salmon, depth of planting, 59:84
mortality, 61:122
survival, 61:122
spotted bass, number per nest, 62:186
stocking, in Maryland, 60:261
sucker, food of atlantic salmon, 65:153
food of brook trout, 65:153
trout, bacterial disease of, 62:152
percentage loss in hatcheries, 69:85
rearing in circular pool, 60:121
vs. fingerlings, stocking, 71:354
Fucus, 64:307
Funchalia, 73:302
balboae, 73:303
danae, 73:303
toaningi, 73:303
villosa, 73:303
woodwardi, 73:303
Fundulus, 60:101; 61:132; 62:340; 64:424; 71:185; 72:70; 82:19, 29
chrysotus, 79:147, 82:15, 29
diaphanus, 65:109, 134, 298; 67:128, 181; 70:82, 354; 75:167; 76:109, 304, 309, 312; 82:29
dispar, 70:359; 81:326
heteroclitus, 63:26; 75:262; 78:108; 81: 45
lineolatus, 81:326
notatus, 75:88; 76:27; 80:37; 81:325
notti, 81:326
olivaceus, 71:203
parvipinnis, 63:211
Fungus, control of, 74:34
in brook trout, 63:242
in British stream, 66:388
in rainbow trout, 70:264
Furacin, furunculosis treatment, 75:186
Furunculosis, control of, 71:316
culture test for, 61:197
in brook trout, 60:110; 61:193
in British Isles, 66:385
in trout, 64:252; 78:56
in wild fish, 63:234; 74:22
on Pacific Coast, 62:249
loss from, 76:16
sulfonamide therapy, 78:117
treatment of, 62:115, 130; 76:82;77:93, 78:181
with drugs, 75:186
with potassium permanganate, 65:90
Fusconaia flava, 64:446

G

Gadus callarias, 62:314; 70:79
morrhua, 69:280
Galcichthys felis, 79:141
Gallo, in Mexican waters, 74:77
Gallus gallus, 75:127
Gambusia, 61:132; 66:367; 72:67, 70; 73:144; 74:351; 82:26, 173
affinis, 61:208; 70:359; 71:185; 73:47; 76:60; 79:147; 80:90; 82:26, 214, 256
patruelis, 61:213
Gammarus, 59:175; 60:65; 62:139; 63:255, 379, 389; 64:73, 121; 66:197, 374, 384; 67:217, 220; 69:153; 71:222, 225; 72:278; 73:247; 74:272; 75:117; 78:16, 18; 80:61, 65
confervicolus, 69:180
fasciatus, 60:82, 89, 95; 63:120, 252; 65:300; 66:201; 76:308
limneus, 59:259; 60:89, 95; 62:198; 65: 125
Gar, alligator, feeding habits, 70:358
catch, 71:203, 206; 73:150
destroyed in salvage operations, 60:282
electrical control of, 61:174; 77:60
feeding habits, 70:356
Florida, 78:39
legislation on in Florida, 77:300
in Mexican waters, 74:76
longnose, catch, 72:214, 73:39
effect of vacuum, 70:472
feeding habits, 70:360
food of rainbow trout, 76:309
host for glochidia of yellow sand shell, 59:218
in Alabama, 80:31, 37, 40
in Florida, 78:39
in Michigan, 70:195; 76:304
in Texas waters, 82:214
trapped in weir, 73:76
perch as food of, 59:158

population estimates, 81:10
removal, 70:384
shortnose, catch, 73:39; 82:245
electric collecting, 77:57
host for glochidia of yellow sand shell, 59:218
in Florida, 71:184
in Minnesota, 78:165, 173
spotted, catch, 82:245
feeding habits, 70:359
food of, 82:13
in Alabama, 80:31
in Florida, 78:39
in Louisiana, 82:258
Gas-bubble disease, 71:116
Gaspereau, in hatchery diet, 70:299
mortality of, 67:91
Gasterosteidae, 60:217
Gasterosteus, 65:154
aculeatus, 69:180; 77:162; 78:103
Gastropoda, 59:259; 65:131; 66:183; 70:352; 71:110; 80:61, 65
Gear, effectiveness, 73:152
fishing, Great Lakes, 66:137
relation to captured length, whitefish, 77:183
selectivity, 65:71; 80:28, 138
Gelatin, in trout diet, 60:142
Gennadas, 73:290
alcocki, 73:293, 295
brevirostris, 73:292
bouvieri, 73:293
capinsis, 73:292
elegans, 73:292
gardineri, 73:294
gilchristi, 73:294
incertus, 73:294
Kempi, 73:292
parvus, 73:293
propinquus, 73:295
scutatus, 73:295
similis, 73:292
sordidus, 73:291
talismani, 73:294
tinayrei, 73:293
valens, 73:293
Geochemical interpretation, water analysis, 74:223
Georgia, hatchery method in, 59:215
legislation, 59:25; 64:97; 70:29
reservoir fishery problem, Lake Tocoa, 66:64
Germany, eels, 62:392
fish culture in, 62:391
Germo alalunga, 67:257; 74:72; 80:111
Gerridae, 60:66; 66:197, 254; 69:248; 70:317, 330
Gerres cinerus, 74:76
Gila atraria, 70:81; 73:182
cypha, 80:87
robusta, 80:90
Gillette pollution bill, 71:42
Gill disease, bacterial, 72:234; 74:81
disorder, 74:212
Gill infections, 73:34
Gill lice, on trout, 63:233
Gill nets, determination of optimum mesh size, 79:167
efficiency, 74:237
experimental, 73:28; 74:92, 145
floating, 73:133
frequency distribution of fish in, 71:265
Lake Ontario, 74:234
mesh sizes, herring nets, 59:67
Minnesota indices, 78:168
perch problems, 78:173
selectivity, 78:172
use in population studies, 79:195
Gizzard shad, catch, 71:203, 206; 73:148, 150
plankton eater, 59:183
Glaridacris catostomi, 70:163; 78:21
confusus, 70:163; 71:287
Gleocystis, 66:119
Gleotricha, 60:254
Globigerina, 74:255
Glochidia, 70:167
Glossosoma, 60:65, 81; 63:252; 66:197; 80:102, 105; 81:252
Glugea hertwigi, 66:345
Glyptocephalus cynoglossus, 81:325
Glyptosternon, 78:94
Gnatholepis anjerensis, 74:267
Gobiichthys papuensis, 74:267
Gobius exanthematicus, 80:185
Gobies, in coastal lagoon, 69:180
Hawaiian, 74:267
Gocra, 60:81
stylata, 70:243
Gogebic Lake, fish migration, 73:82
Goitre, trout, in Michigan, 59:164
Goldeye, catch, 60:224; 71:203
feeding habits, 62:309
food of, 60:224
growth rate, 60:224
in Great Slave Lake, 77:86
in Manitoba, 62:378; 79:22, 169
in Red Lakes, Minnesota, 81:182
in Texas waters, 82:214
rare in Lake of the Woods, 73:105, 77:13,23
Goldfish, anabiosis, 62:340
control of parasites, 71:123
effect of arsenic on, 60:270
effect of D.D.T., on, 75:50, 57
effect of fin clipping, 80:270
effect of oxygen concentrations, 61:218
effect of pressure on, 61:219
effect of rotenone on, 68:271
in feeding experiment, 80:155
fish food, in Ohio Ponds, 62:157
hatchery food, 64:136
forage fish, 76:55, 61
in Lake Erie, 63:57
in Nevada, 73:181; 80:88
in ponds, 69:257; 79:123
mortality, 71:116
oxygen consumption, 63:211
parasites on, 64:176
potential yield, 71:69
propogation, 61:132
range of pH tolerance, 61:217
removal by rotenone, 75:140
respiration of, 59:241
toxicity threshold, 78:100, 104
vitamin requirements, 63:338
Golenkinia, 73:392
Gomphonema, 66:114
acuminatum, 66:119
constrictum, 66:121
sphaerophorum, 66:121
Gomphosphaeria, 60:254
lacustris, 66:119
Gomphus, 59:259; 60:65; 64:278; 66:258; 75:120
exilis, 69:251, 254
Gonad measurements, brown trout, 71:195
Goniobasis, 61:204
Goniosoma natator, 78:94
Goose barnacle, 74:78
Grading, commercial fish, 71:316
fishery products, 70:189
Grapefruit juice, in diet, 63:341
Grapeus nankin, 65:343
Graptoleberis, 67:219
Graptemys geographica, 70:205

Grasshoppers, bait, in Michigan, 65:216
food of bluegill, 69:246
brook trout, 60:66; 63:191
brown trout, 71:109
cutthroat trout, 63:200
grayling, 69:246
lake trout, 67:167
rainbow trout, 63:255; 66:197
meal, in trout diet, 68:99
Grayling, angling for in Manitoba, 62:379
culture of, 62:171
disease treatment, 62:172
expanding hatchery production, 79:247
reared in hatchery, 76:16
spawning, in Michigan, 62:177
species of, 62:177
Grayling, American, in Great Slave Lake, 77:86
Arctic, 60:216; 62:378; 79:24
Montana, eastern introduction, 59:21; 75:37
food of, 68:188, 69:244
Great Lakes, artificial vs. natural propogation, 66:56
Committee, 80:335
Conservation Council, 63:21; 64:22; 65:23
Fishing boats on, 63:32
Fisheries Conference, 68:36
Fisheries, depletion, 66:36; 71:34
division of authority, 59:50
effects of lamprey, 76:167, 172
effects of pollution, 59:51
efforts at husbandry, 59:46
importance, 59:45
management of fishery, 66:131
minimum mesh of gill nets, 66:60
problems, 59:63
recommended gill net mesh sizes, 64:109
selective action of gear, 65:71
smelt mortality, 74:310
species extermination, 59:46
statistics, 63:33, 292; 65:73; 71:69
status of, 59:45
yield per acre, 73:143
International Board of Inquiry, 71:34
investigations, 69:33
pollution, 65:75
spread of lamprey, 66:172
treaty, failure of approval, 59:30
turbidity and decline of fishery, 75:281
use of deep water trap nets, 62:64
Great Slave Lake, fish production, 77:81
bottom fauna, 82:210
Grebe, hatchery predator, 64:129
Green River Steelhead trout, 70:209
Greycod, 82:324
Grouper, in Mexican waters, 74:75
Growth, calculations from scales, 64:103
change of rate, 70:145; 74:334
compensation, 72:121; 74:116
control chart, Atlantic Salmon, 78:189
data, use of in scale studies, 79:187
Deep Lake population, 75:209
effect of competition on, 79:118
effect of crowding on, 63:25
effect of heredity on, 64:203
effect of temperature on, 59:213; 70:339
factors in, 65:157
fertilized lakes, 78:152
in weight, 72:75
method of calculation, 70:108, 144
nomograph for computation, 78:156
relation to turbidity, 75:306
requirements of *Bacterium salmonicida*, 82:132
scale study method, 70:98
season, bass, 70:183
white crappie, 70:183
study in Tennessee, 68:243
stunted, causative factors, 71:102
transplants, 73:165
seasonal changes, 73:117
trout treated with sulfamerazine, 77:94, 98
types to yield, relation of, 82:118
Growth rate, of alewife, 64:119
atlantic salmon, 62:211, 304; 65:157
bass, in hatchery ponds in Louisiana, 59:210
in fertilized ponds, 63:106
black crappie, 76:65, 76; 82:255
bluegill, 70:335; 71:104; 75:209; 76:65, 68, 190; 78:85; 79:134; 80:200
Brazilian catfish, 66:75
Brazilian fishes, 65:268
brook trout, 59:126; 60:233; 62:347; 64:74, 156; 65:366; 66:203; 67:126; 70:225, 230; 78:20; 80:255
brown bullhead, 69:205
brown trout, 65:366; 73:209; 75:147; 80:93, 255; 81:171
bullfrog, 61:264
bullhead, 80:50
burbot, 80:163
carp, 59:144; 81:138
changes due to winterkill, 78:82
channel catfish, 80:23, 119, 174
chub, in Washington, 65:145
chub, lake, 78:21
cisco, 67:237
crayfish, 65:191
croaker, 70:478
cutthroat trout, 80:251; 81:235, 240
effect of food habits on, 80:77
effect on maturity, 61:99
fishes in Michigan, 60:186
fish on hatchery diets, 64:439
fluctuation of, 78:84
golden shiner, 66:246
golden trout, 64:262
goldeye, 60:224
grayling in hatchery, 62:175
increased by selective breeding, 60:109
kamloops trout, 62:146
king salmon, 65:168
kiyi, 74:89
Lake Ontario bloater, 74:239
lake trout, 59:60; 65:366; 77:129; 78:19; 80:260; 81:17, 111, 129
largemouth bass, 66:242; 71:104; 72:68; 76:65, 78; 78:88; 79:135; 80:200; 82:255
lawyer or ling, 70:77
lobster, 75:267
longjaw cisco, 76:215
longnose sucker, 78:20; 80:93
marked fish, 71:262; 74:367; 79:165
minnows in ponds, 65:135
mountain whitefish, 78:17
muskellunge fry, 64:316; 70:427
northern pike, 62:327; 71:157
pike, 60:230
pumpkinseed, 76:65, 72; 78:88
rainbow trout, 60:117; 62:199; 63:361; 65:366; 78:18; 79:94; 80:93, 251
Reighard's chub, 72:108
rock bass, 71:131; 72:72; 76:64, 74
salmonids in Argentina, 69:282
sauger, 60:229; 79:30
sculpin, 81:249
sheepshead, 79:43
silver minnow, 71:216
smallmouth bass, 60:39, 57; 65:310; 67:101; 76:65, 80; 80:200
smelt, 66:140

space factor in, 59:144
sponge, 67:47
spotted bass, 80:200; 82:255
steelhead trout, 70:215; 75:77
sturgeon, 60:227
sunfish, in Louisiana hatchery pond, 59:210
sunfish, hybrids, 79:117
tagged fish, 69:77
trout on diets, 60:149; 61:62, 68, 72; 65:163, 302; 68:105
trout, 64:197; 65:126; 67:250;80:251
trout, hybrid, 80:251, 254, 258
tullibee, 60:222; 73:125
walleye, 63:348; 73:90, 244; 80:200; 82:40
western white sucker, 80:93
white bass, 82:213
white crappie, 66:227; 79:133; 80:2, 9, 200
whitefish, 60:218; 64:231; 68:152; 77:178
yellow bass, 82:91, 94
yellow perch, 60:229; 70:102, 436; 76:64, 70; 78:88; 79:30; 80:200
Grunnion, annulus formation, 66:227
Grunt, bluestriped, name change, 82:327
Gryllidae, 63:255; 66:197
Gulf of Mexico, oil pollution on oysters, 65:293
fisheries, 70:31; 71:67
Gulf States Marine Fisheries Commission, 79:272
Guntersville Reservoir, 72:245; 73:137; 80:2
Guppy, parasite on, 64:179
production, 79:133
Gymnodinium, 66:119
Gymnosarda alleterata, 64:157
Gyraulus, 68:162; 72:278
Gyrinidae, 59:176; 60:66; 69:247, 250, 252; 70:317; 76:112, 310
Gyrinus, 60:192; 70:320; 75:53, 120
Gyrodactylidae, 70:163
Gyrodactylus, 60:110, 168; 61:78, 202; 62:114; 63:161; 65:89; 69:97; 71:122; 74:25, 219; 76:16

H

Habitat, bullfrog, 61:263
changing Clinch River into trout stream, 68:228
of minnows, 61:132
mosquitofish, 61:208
need for control of, 64:364
sculpin, 81:249
suitable for fish, 65:244
white shrimp, 82:151
Habrophlebia vibrans, 70:243
Haddock, abundance of, 60:174
determination of freshness, 64:401
effect of temperature on 64:387
investigations, 69:32
percentage of scrod, 70:94
potential yields, 71:65
production of, 61:24; 62:59; 70:91; 82:323
tagging, 71:228; 73:321
trout diet, 59:126
waste into fish meal, 61:65
Hadropterus maculatus, 75:133; 80:69
phoxocephalus, 75:133
Hagenius brevistylus, 64:278
Hairworms, food of rainbow trout, 66:197
Hake, nutritive value, 64:436
potential yields, 71:65, 66
tagging, 73:321
Hake, silver, name not changed, 81:325
in salmon diet, 64:155
Halibut, atlantic, production, 82:324
Halibut, California, in Mexican waters, 74:76
Halibut Commission, progress, 59:31; 60:22; 62:22; 63:20; 64:21; 65:22
see also International Relations
Halibut, Pacific, fishery, history, 63:85
increase in, 70:30
international cooperation, 67:148
investigation and regulation, 63:85
investigations, 69:30
production, 61:24; 71:55; 80:355
tagging, 73:321
studies on taxonomy, 80:114
Halibut meal, food of sockeye, 62:233
Halibut, potential yields, 71:65, 68; 82:122
Haliotis, 74:79
assimilis, 67:258
cracherodii, 67:258
corrugata, 67:258
fulgens, 67:258
rufescens, 67:258
Halipilidae, 60:66, 192; 63:255; 66:197, 255; 71:170; 82:15, 19, 29
Haliplus, 59:258; 69:248; 76:111, 310
Haliporus, 73:285
curvirostris, 73:288
thetis, 73:288
Halophila ovalis, 74:265
Halophytes, emergent, 74:265
Halteria grandinella, 64:447
Haplonema hammulatum, 70:170
Hardness, ammunition plant wastes, 73:46
in Minnesota ponds, 66:109
Harengula pensacolae, 79:141
Hastoperla brevis, 70:243
Hatchery, aerating device for transporting fish, 69:296
algae, cause of mortality, 64:416
alkalinity of water, 59:196
bass, in California, 69:120
in New York, 64:132
breeding ponds in Ohio, 61:108
brood stock, Vermont brook trout, 62:141
brook trout, diet, 65:161
egg loss in hatchery, 62:141
bullheads in, 63:399
chemical analysis of water, 59:195; 60:146; 63:244, 396
circular ponds, 60:121; 70:430
club operated, Indiana, 68:118
control of weeds with sodium arsenite, 61:148
cost of, 61:107; 78:212
crayfish in ponds, 63:397
daphnia, in New Jersey, 62:167
description of ponds, Ohio, 61:112
description of sockeye ponds, British Columbia, 61:129
diet of king salmon, 65:165
dipper feeding, 65:308
control of disease, 62:114; 74:209
disease in, 61:107; 63:240; 65:76
disease loss, 76:16
disease treatment, 61:114; 63:172
disinfection and maintenance, 74:26
dry food of trout, 62:189
effect of overcrowding, 63:241
effect of reduced flow on fry, 69:201
effect of temperature, Atlantic salmon, 62:216
efficient management, 61:106
egg output, British Columbia, 61:165
egg-rearing baskets, 69:132
experimental trout, Vermont, 62:171
feeding method, 64:159
fertilization of ponds, Indiana, 61:117
fish grader, 65:313
first hatchery, Texas, 61:174

food cost, 64:161, 172
food preparation, 64:158
gill disease, 65:85
growth of atlantic salmon, 62:211
heating water supply, 65:340
kingfisher predation, 76:105
management in Mexico, 67:94
methods, in Georgia, 59:215
in Indiana, 61:116
in Oklahoma, 59:215
in Montana, 72:145
monetary value of, 61:21
municipal, 65:179; 68:221
number of, Ontario, 60:35
United States, 61:121
nutritional requirements, brook trout, 63:167
operations in Arkansas, 64:127
oxygen supply in water, 59:195
output of, 61:19
painting of troughs, 60:124
percentage loss of trout, 69:85
plan of, in Louisiana, 59:208
plankton production, New Jersey, 62:168
planting success, 73:341
policy, in Ontario, 60:35
ponds, disease in, 64:138
fertilization, 64:129
golden shiner as forage fish, 62:114
stocking rate, Ohio, 61:108
predators in, 64:129
private, 71:317
problem of food in, 59:268
production, bass, in New Jersey, 62:167
brook trout, Ontario, 60:35
channel catfish, 59:114; 61:171
herring, Ontario, 60:36
lake trout, Ontario, 60:35
ling, 69:194
pickerel, Ontario, 60:35
rainbow trout, Ontario, 60:35
rock bass, 63:398
shad, 62:48
smallmouth bass, 60:36; 65:309
sockeye salmon, British Columbia, 60:265
warmwater fishes, 61:116
whitefish, 60:35
white perch, 62:48
yellow perch, 62:48
on Columbia River, 78:53
in Indiana, 73:373
Manitoba, 60:119
Minnesota, 59:226
Ontario, 60:45
Saskatchewan, 60:119
spawning boxes, 63:402
species propogated, Ontario, 60:35
summary of tests on food, 67:262
superintendents duties, Ohio, 61:111
supplements for fresh meat diet, 68:96
survey of foods and feeding practices, 65:376
treatment for trichodinasis, 69:94
trout, as foragers, 64:339
feeding in California, 65:305
statistics, 76:14
ulcer disease, 68:136
use of electracide, 65:259
use of mechanical devices, 62:179
use of potassium permanganate, 64:304
various diets, 64:438
work in North America, 66:390
Hay, as fertilizer, 72:229; 73:264; 74:342
Heart, in trout diet, 60:127, 147; 61:61; 62:116, 191; 65:380
seal, as hatchery food, 67:270
Heduris tiara, 69:271
Heincke ring tag, 73:323, 333
Heincke stud tag, 73:323, 333
Helichus, 70:320
Hydropsyche, 66:375; 76:109
borealis, 75:121
Heliosoma, 69:252; 75:171; 76:308
Hellgramites, bottom organisms, 61:50; 66:183
Helodrilus tetraedrus, 81:210
Hemerodromia, 73:202; 75:54
Hemipenaeus, 73:300
carpenteri, 73:301
crassipes, 73:301
gracilis, 73:301
sibogae, 73:301
speciosus, 73:301
spinidorsalis, 73:301
Hemiramphus, 78:94
Hemiptera, 59:175; 60:192; 63:191, 199; 65:126, 131; 66:183, 253; 67:216; 68:190; 69:207, 246; 71:109, 257; 73:246; 80:52; 81:120, 245; 82:16, 21, 22, 216, 217
Hemlock needles, food of rainbow trout, 64:342
Hemoglobin content, effect of sulfamerazine on, 77:98
Hemophilus, 78:56, 59
Hepaticola bakeri, 70:163, 170
Hepomadus, 73:300
glacialis, 73:300
tener, 73:301
Heptakenidae, 70:314; 80:102, 105
Heptagenia, 60:81, 192; 68:330; 70:314; 75:120, 128; 80:104
hebe, 70:243
maculipennis, 75:53
pulla, 70:243
Herbicides, use of, 78:215
Heredity, effect on growth of brook trout, 64:203
influence on spawning season, 61:43
in trout, 64:197
Herons, hatchery predator, 64:129
Heron, Anthony's green, predator, 69:123
blackcrowned night, predator, 69:123
great blue, marks on fish, 63:230
predator, in bass hatchery, 69:123
on smallmouth bass, 66:271
on trout, 62:247
green, predator, 66:271
Herpobdella punctata, 66:344
Herring, catch, Great Lakes, 63:301; 80:352, 355
fecundity, 75:72
food of ling, 60:199
freshets, action in, 75:264
frozen, hatchery food, 64:136
in Chesapeake Bay, 62:47
in hatchery diet, 64:157; 65:310
in pound nets, 59:79
in trout diet, 62:127
Lake Superior, 59:58
nutritive value, 64:436
propogation of, Ontario, 60:36
regulations, 59:67
spawning of, 64:307
stocking of, Maryland, 60:261
tagging, 69:65; 73:321
year classes, 75:308
Herring, bigeye, in Texas waters, 79:143
fillets, food of largemouth bass, 63:164
golden, name change, 81:326
glut, in hatchery diet, 64:157
in Florida waters, 78:40
lake, catch, 74:144, 230, 312; 80:281
name change, 82:327
trapped in weir, 73:87
marine, canned for hatchery food, 64:136
potential yields, 71:65, 68

meal, food for sockeye salmon, 62:233
as pond fertilizer, 62:317
pacific, investigations, 69:31
population, British Columbia, 63:286
scale study method, 70:98
river, food of whitefish, 73:367
name change, 81:326
sea, hatchery food, 65:382
production of, 61:24
tailor, in hatchery diet, 64:157
Hesperophylax, 77:162, 166, 175
Heterandria, 61:132
formosa, 71:184; 82:15, 24, 25
Heteranthera dubia, 61:146
Heterlimnius trivittatus, 75:53
Heterometa ovata, 64:447
Heteropenaeus longimanus, 73:302, 308
Heteroptera, 60:66
Hexagenia, 60:65, 192, 222; 63:278, 389; 66:140; 67:216, 217, 220; 68:162; 70:315, 317, 320, 322; 73:204, 242; 76:313; 80:61, 65; 81:113, 123
atrocaudata, 75:120
bilineata, 72:59
limbata, 60:219, 224, 227, 229, 230, 235
mingo, 77:14
occulta, 69:252
rigida, 60:219, 229, 230
Hexamethylenamine, in disease treatment, 63:172
Hexapod, food of mosquita fish, 61:211
Hiodontidae, 60:217; 71:210
Hiodon alosoides, 60:224; 82:214
chrysopsis, 60:224; 62:309, 378
selenops, 80:37
tergisus, 62:378; 67:215; 73:39; 77:17
Hippodamia, 75:120
Hippoglossus stenolepis, 80:114; 82:122
Hippoglossoides platessoides, 81:325
Hirudinea, 59:175; 60:191, 319; 62:308; 65:127; 66:183, 254; 70:352; 71:170, 221; 72:56; 73:200; 76:312
Hirudineae, 60:254, 255
Hogan's salt mixture, in diet, 63:341
Hogmolly, in Des Moines River, 75:116
Hog sucker, collected with electric seine, 77:57
Hog melts, in trout diet, 65:161
Hog spleen, as salmon food, 73:66
Holopedium, 70:350, 427
gibberum, 65:108
Hololepis barratti, 71:184
Holosticha vernalis, 64:447
Holothuria atra, 78:94
edulis, 78:94
marmorata, 78:94
sabra, 78:94
Homarus americanus, 75:267
Homoeocladia acicularis, 66:121
amphibia, 66:115, 121
Homoptera, 60:66; 63:200; 65:126, 127, 131; 66:253; 67:217, 219, 220; 68:190; 69:246
Homing proclivities, salmon, 73:339
in fishes, 81:4, 9, 12, 14
Hominy feed, in trout diet, 60:133
Hook tag, 73:323
Hoop-net, catches, Wheeler Reservoir, 73:37
Minnesota indices, 78:171
Hoover Commission, consideration of report, 79:13, 298
Hormidium, 82:22
Horse meat, in trout diet, 59:168; 60:147; 67:267
Horsetail, in Quebec, 64:466
Huachinango, in Mexican waters, 74:75
Human annoyance factor, 72:241
Humus, loss in ponds, 73:265
Huso huso, 62:314
Hyacinth, water, 73:282
Hyalella, 59:175, 209; 60:65, 188; 66:374; 69:248, 250, 251; 69:207; 72:137, 276, 283; 73:232; 75:171, 328; 76:257; 78:16, 21; 79:146, 150, 152, 154; 82:15, 30, 204-9
azteca, 64:241; 79:150
knickerbockeri, 59:258, 259; 60:82, 89, 95-7; 61:201, 230; 62:198; 63:222, 379, 382, 389; 65:63-7; 66:344, 364; 68:191, 271; 69:153, 247, 252-4; 70:352; 76:308
Hyalotheca, 65:106
Hybognathus, 76:111
hankinsoni, 70:166; 75:133; 80:69
nuchalis, 64:93; 71:107, 215; 82:256
placita, 82:214
regius, 78:200
Hybopsis, 76:111
amblops, 82:160
hyostomus, 80:36
kentuckiensis, 59:254
storeriana, 67:217; 82:214
Hyborhynchus notatus, 59:198, 200, 201; 62:204, 290; 64:94, 179; 65:132; 67:128; 68:331; 69:273; 70:82, 144, 166, 313, 422; 71:107; 73:47; 75:49, 55, 88, 127, 133, 201; 76:109, 112, 209, 250, 304, 309, 312, 316, 318; 78:66; 79:58, 64, 127; 80:69; 81:113, 120; 82:160, 193
Hybrids, bass, 61:87
cutthroat X rainbow, 80:251
use in stocking, 79:112
vigor, 79:118
Hydra, 60:191, 319; 63:130, 391; 64:136
Hydracarina, 60:254, 255, 258; 61:211; 63:199; 65:126, 127; 67:220; 68:190; 69:246; 70:352; 71:170, 221; 72:56; 73:200, 233; 76:312; 80:75, 102, 105; 82:15, 25, 27-9
Hydrobiology and Fish Culture, Committee, report of, 81:314; 82:315
Hydrocanthus oblongus, 79:149
Hydrocele embryonalis, 62:153
Hydrocoelus cantharidosmos, 59:181
Hydrocotyle umbellata, 76:303
Hydrodictyon, 62:282; 65:118; 66:271; 69:123; 73:283; 74:340; 76:187
reticulatum, 73:59
Hydrogen-ion concentration, in ponds, 73:379; 74:224; see also pH
in relation to productivity, 76:325
Hydrogen sulfide, effect on respiration, 59:241
toxicity of, 79:59
Hydrographic bottle, 62:342
Hydrographic studies, in Louisiana, 62:336
Hydrophilidae, 60:66; 63:255; 66:197, 254; 69:251; 71:170, 225; 76:310; 82:16, 19
Hydrophilus, 74:271
Hydroptilidae, 60:65; 66:254; 73:202; 76:310; 80:102, 105; 81:210
Hydropsychidae, 60:65; 73:202; 80:101, 105
Hydropsyche, 60:81; 63:188, 252; 64:241; 66:375; 70:321; 75:53, 121, 128; 77:162, 166, 175; 81:252, 253
bettini, 70:243
sparna, 70:243; 71:220-4
Hydroporus, 59:258; 60:66; 79:149
Hydrous, 66:267
triangularis, 75:120; 76:111
Hydrovatus compressus, 79:149
Hyla, 79:148

Hymenoptera, 60:66, 63:194, 199, 255; 65:62; 66:197; 67:216, 222, 223; 68: 190; 69:246-54; 71:109-11, 256-7; 72:141-2; 76:109, 111; 80:102, 105; 81:120, 245-6; 82:216
***Hymenopenaeus*, 73:286**
***aequalis*, 73:289**
***aphoticus*, 73:289**
***debilis*, 73:289**
***diomedeae*, 73:289**
***doris*, 73:289**
***laevis*, 73:289**
***lucasii*, 73:289**
***mereus*, 73:289**
***modestus*, 73:288**
***mulleri*, 73:288**
***neptunus*, 73:290**
***obliquirostris*, 73:290**
***propinquus*, 73:289**
***robustus*, 73:288; 82:321**
***sibogae*, 73:289**
***taprobanensis*, 73:290**
***triarthrus*, 73:289**
***tropicalis*, 73:288**
***villosus*, 73:290**
***Hypentilium nigricans*, 66:317, 357; 68: 258, 324, 331; 75:50, 55-8, 116, 133, 175; 76:208, 315, 318-20; 77:57; 80: 198; 82:160**
***Hyporamphis*, 74:77**

I

Ice, disappearance and trout migration, 71:180
effect of, on stream, 81:207
formation and smelt mortality, 74:318
in streams, 81:206
Ichneumonidae, 63:388, 67:216; 69:251, 253
Ichneumonoidea, 65:62
Ichneumon fly, food of brook trout, 64:73
***Ichthyomyzon*, 77:60**
***concolor*, 63:230**
***fossor*, 76:148, 165**
***unicuspis*, 76:148, 165; 81:289**
Ichthyophthiriasis, in Ohio hatcheries, 61:107
***Ichthypophthirius*, 62:114, 159; 64:138; 66:272; 68:335; 69:99, 123; 74:24, 219; 77:140**
***multifiliis*, 59:199; 61:172, 202; 72:234; 81:99**
Ichthyology, education for, 70:129
***Ictalurus*, 73:147**
***anguilla*, 77:22, 57**
***catus*, 73:182, 364; 78:39**
***furcatus*, 71:203; 73:39; 80:31, 37**
***lacustris*, 71:203; 73:39, 76, 182, 364, 374; 75:112; 78:39, 66; 80:12, 31, 37, 90, 119, 174, 198, 210; 82:214, 245**
***lupus*, 75:112**
***punctatus*, 59:110, 155; 60:232; 61:171; 63:29, 321, 339; 64:179; 65:62; 67: 220; 69:242; 75:110**
***Ictiobus*, 70:358, 384; 77:55, 57**
***bubalus*, 60:215; 71:206; 73:39, 147; 75:175; 79:123; 80:31, 38; 82:214, 245**
***cyprinellus*, 82:104**
***niger*, 71:206; 73:39, 147; 80:235; 82: 214, 245**
Idaho, effect of drought on fish, 64:61
legislation, 59:26; 64:98; 70:28
Mud Lake irrigation reservoir, 66:68
pollution abatement, 62:359
quantity hatchery food used, 65:399
***Illinobdella*, 70:167**
Illinois, analysis of sewage effluent, 64: 444
annulus formation in white crappie, 66:227
legislation, 59:26; 64:98
effect of drought on fish, 64:59
fish populations in streams, 82:193
pollution abatement, 62:359
research in progress, 63:25, 259
returns on tagged fish, 66:320
survey of fishes, Champaign county, 59:259
Impoundment, effect on fishing intensity, 72:103
fish management, 71:200
fresh water, 71:80
T.V.A., commercial fishery, 73:137
Inconnu, 77:86, 90
Incubation period, atlantic salmon eggs, 69:212
burbot, 80:172
creek chub, 75:344
effect of temperature on, 64:281
smallmouth bass, 75:45
Indalone, effect on salmon and trout, 77:163
Indexes, lake trout fishery, 75:23
India, fisheries of, 78:91
Indiana, cooperative rearing ponds, 61:117
distribution, size of fish, 61:117
effect of drought on, 64:58
fishing in Kankakee River, 59:206
hatchery methods, 61:116
hatchery production, 73:373
legislation, 59:26; 64:98; 65:39; 70:28; 71:27
pollution abatement, 62:359
propagation, bluegill, 61:116
channel catfish, 61:116
crappies, 61:116
largemouth, 61:116
redeared sunfish, 61:116
smallmouth bass, 61:116
rockbass, 61:116
walleye, 61:116
yellow perch, 61:116
Indigenous fishes, Lake Mead, 80:84
Indo-Pacific Fisheries Council, 79:269; 80:237
Industrial wastes, Holston River, 73:202
Infections, gill, 73:34
Infusoria, parasites in bait minnows, 59:199
in net plankton, 66:123
Injections for vitamin deficiency, 72:30
Injury, due to electric shocking, 77:62
Insects, associations in lake, 59:175
effect of copper sulfate on, 64:278
effect of beaver dam, 70:241
food of, alewife, 64:122
young black bass, 60:50
brook trout, 60:65; 64:73
chub sucker, 65:61
fishes, 63:379-90
golden shiner, 60:254
lawyer, 60:259
merganser, 66:337
mosquito fish, 61:211
silver chub, 67:217
smelt, 66:140
trout, 59:146
walleye, 60:258
whitefish, 68:161
hatchery food, 65:388
in Quebec Lakes, 62:198
predaceous, in Ohio Ponds, 62:162
Insecticides, control of use, 77:303
effect on trout and salmon, 77:160
use of, 78:215
Inspection of fish, 70:483

Instructions to Authors, 66:468; 67:312; 68:294; 69:326; 70:512; 71:395; 72:309; 74:391; 75:399; 76:447; 77:341; 78:257; 79:311; 80:371; 81:355; 82:357
Internal anchor tag, 73:324, 334
Inter-American Tropical Tuna Commission, 80:335; 81:310
Internation Commission for Northwest Atlantic Fisheries, 81:309
International Commission for the Scientific Investigation of Tuna, 81:309
International Board of Inquiry for the Great Lakes Fisheries, 70:31; 71:34
International Fisheries Conservation Council of Great Lakes, 59:32
International Convention for the Great Lakes Fisheries, 81:310
International Fact-finding Commission, 64:22; 65:23; 66:26
International Fishery Agreement between Mexico and the U. S., 67:260
International Fisheries Commission, 62:22; 63:20; 64:21; 65:22; 66:27; 67:26; 69:41; 70:30; 71:35, 329; 73:320; 77:304; 78:228; 79:266; 80:114, 333; 81:310
  fishery agreements, 80:328
  technical cooperation, 80:329
International Joint Commission, 70:31
International Missisquoi Bay-Lake Champlain Commission, 70:31
International Pacific Salmon Commission, 63:21; 64:21; 65:23; 68:35; 69:41; 70:30; 71:35, 329; 73:320; 77:305; 78:229; 79:267; 80:334; 81:310
International Relations Committee, see under Committee
International Relations, fishery research cooperation, 67:147
International Whaling Commission, 80:342; 81:311
Intestinal catarrh, 70:301
Intestinal flagellates in trout, 68:236
Intestinal fungisitosis, in brook trout, 63:241
Interspecific races, brook trout, 81:43
Introduced fishes, Nevada, 73:173
Invertebrates, effects of D.D.T., 75:52
  food of, 82:29
  food of fishes, 80:52, 56, 60
Iodine, in crab meat, 65:343
  in disease treatment, 61:172
Iowa, effect of drought on fishes, 64:59
  fish movement in lake, 66:98
  legislation, 59:26; 64:98
  outlet for nursery pond, 64:170
  spawning of rainbow trout, 64:167
  stream improvement, 65:322
Iron, 60:81; 75:120
  longimanus, 81:252
  rubidus, 75:53
Iron, in Minnesota ponds, 66:110
  in Ontario waters, 60:41
  oxide, in ponds, 73:379
  relation to productivity, 76:330
Irradiation, in disease treatment, 60:167
Irrigation, relation to fish and game, symposium, 76:359
  reservoirs, 71:298, 311
Ischnura verticalis, 61:229
Isoetes echinospora, 64:465
Isogenus, 76:257
  elongatus, 80:104
  frontalis, 71:222, 225; 72:36
Isonychia, 68:330; 70:315, 317, 320, 322, 328-32; 75:120
  albomanicata, 75:53
Isoperla, 76:310; 80:102, 104, 107; 81:252, 253
  montana, 70:243, 245
  truncata, 70:243
Isopoda, effect of arsenic on, 61:230
  food of bullhead, 69:207
  in bottom fauna, 60:191; 68:232
  in coastal lagoon, 69:180
Istiophorus greyi, 74:77
  nigricans, 79:141
I T C, report on, 78:224
I T O, work of, 78:218
Isaac Walton League, clean stream campaign, 62:357
  work on pollution, 64:88, 71:29, 42

J

Jackson method, mortality rates, 82:63
Jaibas, in Mexican waters, 74:78
Japan, abrogates seal treaty, 71:36
  fishery activities in Alaska, 69:40
  fisheries, 78:227
    administration of, 79:270; 80:338; 81:312
  oysters, 71:33
Jellyfish, invade coastal waters of Nova Scotia, 65:279
Jewfish, in Mexican waters, 74:75
Jonkershoek hatchery, South Africa, 75:105; 77:65
Jordanella floridae, 82:15, 22
Jorobado, in Mexican waters, 74:76
Juncus, 67:179; 69:145
  militaris, 75:167
Jurel, in Mexican waters, 74:72

K

Kaku, in Hawaiian waters, 74:268
Kansas, effect of drought on fish, 64:61
  legislation, 59:26; 60:21; 63:35; 64:98; 65:39
Katsuwonus pelamis, 67:258; 74:72; 80:114
Kelp meal, hatchery food, 67:265
Kentucky, floating spawning boxes, 64:143
  legislation, 59:26; 64:38
Keratella, 77:84; 78:141; 82:22
  aculeata, 66:124
  cochlearis, 66:115; 69:152; 73:244
Kerosene, effect on trout and salmon, 77:163, 171, 175
Kidney, in trout diet, 61:61; 65:379
Killifish, anabiosis, 62:340
  barred, killed by rotenone, 70:82
  effect of copper sulfate on, 65:109; 69:143
  effect of rotenone, 69:149; 70:354
  plains, effect of rotenone on, 82:173
  food of kingfisher, 76:111
  western banded, food of rainbow trout, 76:304, 309, 312
  least, food of spotted gar, 82:13
    food of, 82:24
  in New Brunswick Lake, 75:167
  in New York trout pond, 81:45
  in Nova Scotian lakes, 67:181
  menona, propogation, 65:134
    survival, 67:128
  pacific marine, oxygen consumption, 63:211
  population of, 65:297
  propogation, 61:132
  redfin, food of spotted gar, 82:13
    food of, 82:26, 28
Kingfish, potential yield, 71:67
  in Texas waters, 79:140

Kingfisher, distribution, 76:98
feeding habits, 76:100
food of, 76:104
marks on fish, 63:231
mating and nesting, 76:97
predator, 62:247; 64:129; 66:271, 342; 69:123; 71:218; 76:103, 115
relation to fish management, 76:97
Kinney's fry food, in trout diet, 62:128
Kirchneriella, 65:106
Kiyi, age and growth, 74:89
bathymetric distribution, 74:143
growth, 76:223, 237; 77:227
sex ratio, 74:133
Known age fish, channel catfish, 80:126
lake trout, 80:260
Kokanee, egg output, British Columbia, 61:165
food of Kamloops trout, 60:247
in British Columbia, 64:319
Kraft pulp mills, effect of waste on fish, 79:55
Kurzia latissima, 65:64, 66

L

Labeo, 78:94
Labistes reticulatus, 64:179
Labidesthes sicculus, 59:110; 65:64; 66:373; 67:218; 70:198; 71:185, 203; 76:27, 114, 304; 79:147; 82:215, 247
Laccophilus, 60:192
Lactobacillus arabinosus, 77:153
casei, 74:82; 76:35
Ladona julia, 69:254
Lake Erie Advisory Committee, 63:21; 64:22; 65:23; 66:26
Lake Erie, biological survey, 61:199
bluepike, 59:79
cisco fishing, 62:100
difference from other Great Lakes, 59:72
disappearance of cisco, 60:204
fertilization, effects of, 78:147
effect of pollution on fishing, 63:280
food of black crappie, 63:387
food of burbot, 80:56
food of fishes in, 67:215
food of lake shiner, 63:388
food of largemouth bass, 63:379
food of logperch, 63:385
food of sheepshead, 63:389
food of walleye, 63:390
food of white bass, 63:380
food of whitefish, 63:381
food of yellow perch, 63:384
fry plantings and whitefish catch, 71:1118
goldfish in, 63:57
growth of burbot, 80:163
growth rate of walleye, 63:348
growth of whitefish, 77:178
limnological investigations, 63:271
method of spawn taking, 61:205
parasites on bass, 63:224
pollution, 63:271; 65:75
size of trap net mesh, 62:100
turbidity, 75:281
toxicity added chlorides, 78:96
whitefish catch, 71:352
yield per acre, 73:143
Lake Huron, abundance of walleye in relation to stocking, 66:143
hook fishing, 59:63
growth of whitefish, 77:229
lake trout fishery, 76:121
spawning season in, 64:112
Lake Manitoba, catch of whitefish, 62:312
Lake Michigan, abundance of walleye in relation to stocking, 66:143
hook fishing, 59:63
fish production, 59:188
Reighard's chub in, 72:108
size limits on commercial fish, 64:112
spawning seasons in, 64:112
Lake Ontario, growth of whitefish, 77:229
reintroduction of salmon in streams, 78:128
tagged smallmouth bass, 62:380
Lake Superior, Bureau of Fisheries work, 59:56
herring, 59:58
hook fishing, 59:63
spawning season, 64:112
Lake Winnepeg, plankton, 60:235
preservation of whitefish fishery, 65:272
quantity of bottom fauna, 60:235
Lake Winnipegosis, catch of whitefish, 62:311
Lake, artificial, planting brook trout in, 70:410
Lakes, applications of copper sulfate to, 69:148
applications of rotenone, 69:154
aquatic plants in Quebec, 64:464
British Columbia, production of rainbow trout, 69:187
chemical analysis in New York, 64:189
effect of dams on 64:457
fish population estimate, 62:307
kamloops, British Columbia survey, 62:144
large lakes of Canada, 60:215
management policies, 71:332
number in Minnesota, 59:224
New York, depth distribution of fish, 62:331
plankton, in Quebec, 64:461
productivity indices, 76:322
size in relation to productivity, 76:331
small, trout in Ontario, 59:258
stocking with trout, 69:162
surveys, 60:184; 67:120; 71:184, 201, 333, 335, 337
trout, in Quebec, 64:424
Lake improvement, 60:185; 63:408; 67:109
in scientific management, 63:77
brush shelters, 59:204; 63:409
Lampetra planeri, 82:148
Lamprey, american brook, in Lake Huron, 76:165
in Ontario, 76:148
movement, 81:289
Lamprey, brook, in Ontario, 82:148
killed by rotenone, 70:82
population in stream, 68:285
Lamprey, michigan brook, in Lake Huron, 76:165
in Ontario, 76:148
Lamprey, electric collecting, 77:60
as food of trout, 59:150
Lamprey, pacific, movement, 81:289; 82:148
Lamprey, sea, control experiments, 76:154, 164
diseases of, 81:94
distribution in Michigan, 76:171
effects of attack on lake trout, 79:71
effect on Great Lakes Fishery, 76:167, 172; 80:45, 280, 311; 82:323
factor in decline on lake trout, 82:190
in bottom fauna, 66:183
in Lake Huron, 82:178, 190
investigations on, 76:148; 77:295; 79:275
marks on fish, 63:230

movement, 81:275; 82:123
occurence on fish, 76:152
recommendations, 76:158, 175
spread in Great Lakes, 66:172; 76:123
status, 76:174
trapped in weir, 80:45
Lamprey, silver, in Michigan, 76:165
in Ontario, 76:148
migration, 81:289
Lampsilis anodontoides, 59:218
ovata, 68:325
siliquoidea, 64:446
ventricosa, 64:446; 66:406
Langostina, in Mexican waters, 74:79
Lard, in trout diet, 60:129
Larix laricina, 72:37
Lasmigona complanata, 64:446
costata, 64:446
Lates calcarifer, 78:94
Latin square, 71:125
Latona, 60:187; 67:220
setifera, 63:382, 389; 65:61-8
Latonopsis occidentalis, 64:463
Lawyer (see also, Burbot, Ling), age and growth, 70:77
food of, 60:258; 67:155; 80:56
migration, Lake Michigan, 69:71
Laying mash, fertilizer in ponds, 69:260; 72:97
Leafhoppers, food of bluegill, 69:246
brook trout, 60:66, 73
grayling, 69:246
rainbow trout, 66:197
Leander debilis, 74:255, 267
pacificus, 74:267
Lebistes, 74:350
reticulatus, 63:26; 79:133
Lecare, 66:123
Ledum, 70:422
Leeches, effect of copper sulfate on, 65:109; 69:143
effect of derris on, 72:278, 283
food of brook trout, 60:64; 63:194; 65:127; 66:344; 71:221
rainbow trout, 65:126
in bottom fauna, 60:191; 66:183; 70:170; 72:56; 73:200
in Hocking River, 61:205
parasite of pickerel, 69:271
Lee's phenomenon, 72:118; 73:95
Legislation, Alabama, fish and game law defeated, 62:29
authorizing associations of producers of aquatic organisms, 64:37
black bass, 63:98; 64:97
California statistic laws, 62:113
chub regulations, 59:69
closed seasons, 59:69
commercial fisheries, 62:100; 64:37; 68:28
commercial fishing for King Salmon in Yukon and Kuskokwin rivers, 64:37
federal black bass law, 61:102, 258
federal anti-pollution, 62:30
fishing, Quebec, 62:384
fishing laws, various states, 64:38
fishery research vessel, 64:37
governing killing of sea lions in Alaska, 64:37
governing licenses various states, 63:36
hasty, in Louisiana, 60:19
Hawes black bass bill, 62:363
herring regulations, 59:67
interstate lobster transportation law, 62:30
in Kansas for catfish, 60:21
inspection of seafood, 64:37
loans to fishing industry, 64:37
Maryland, fish protection, 61:103
prohibit sale of black bass, 62:364
Minnesota, fish protection, 61:104
Mississippi, game and fish law passed, 62:28
needed for migratory fishes, 59:24
needed for protection of blackbass, 59:25
oil pollution act, 60:284
pollution laws in Ontario, 60:297, 306
pollution, 65:25
shrimp statistics, 62:113
South Carolina, fish and game laws, defeated, 62:29
Tennessee, fish and game law defeated, 62:29
trap nets, 62:100
uniform laws needed, 60:20
Virginia, discretionary powers removal law defeated, 62:29
vs. Engineering, 60:21
Leiostomus xanthurus, 66:403; 67:81; 79:139, 141
Lemna, 59:177; 64:444; 75:117; 79:150
minor, 62:322; 64:371, 475
triscula, 64:371; 65:124
Length, age-groups, whitefish, 77:203
annual fluctuations, conversion of, 70:116, 283
calculated from scales of atlantic salmon, 64:105
atlantic salmon, 67:191, 203
brown trout, 80:95
channel catfish, 80:123
cisco, 67:238
conversion of, 79:187
fork, 75:161
fork-total relationship, sunfish hybrids, 79:116, 120
fish taken by shocker, 69:213
Length-frequencies, bloater, 74:239
bluegill, 79:134; 82:60
brook trout, 72:40
channel catfish, 80:34
kiyi, 74:96
largemouth bass, 79:135
marked salmon, 77:139
redear sunfish, 82:54
Reighard's chub, 72:116
sea lamprey, 81:288
sculpin, 81:249, 254
sunfish hybrids, 79:119
walleye, 81:192; 82:37
weight relationship, 74:122
white crappie, 79:133
Length, longnose sucker, 80:96
rainbow trout, 80:95
yearling rainbow trout, 70:417
relationship to fecundity, 75:72
removal of legal, results, 78:64
salmonids in Argentina, 69:282
sea lamprey, downstream migrants, 81:283
standard,75:161
standard to total, conversion, 75:237
standard vs. total, 71:270
total, 75:161
total to standard, conversion, 75:237
upstream migrants, salmonids, 82:144
western white sucker, 80:97
Length-weight relationship, alewife 64:120
bluegill, 75:242
brown trout, 81:176
burbot, 80:169
channel catfish, 80:134
cutthroat trout, 81:235, 244
formula for, 80:119, 134
spotted gar, 82:18

largemouth bass, 75:250
lake trout, 79:72
Michigan fish, 75:237
muskellunge, 77:42
northern pike, 75:254
pumpkinseed, 75:246
rainbow trout, 70:415
Reighard's chub, 72:123
rock bass, 71:139; 75:252
sauger, 79:34
sculpin, 81:249, 255
smallmouth bass, 75:248
smelt, 72:259
walleye, 63:354; 73:98
whitefish, 77:231
yellow bass, 82:101
yellow perch, 70:117; 75:244; 79:36
Lepadella, 66:124
Lepibema chrysops, 63:380, 65:68; 70:384, 387; 71:206; 73:39, 147; 75:306; 77:39, 181; 79:127, 192; 80:3, 31, 37, 64
Lepidomeda vittata, 80:87
Lepidostoma, 70:243; 80:102, 105
Lepidoptera, 60:66; 63:199; 64:73; 65:62; 66:197; 67:216; 68:190; 71:110; 73:200; 80:102, 105; 81:246
Lepisosteus, 74:76; 77:60; 82:19
osseus, 70:195, 357, 384, 472; 71:203, 206; 72:187; 73:39, 76, 147; 76:304, 309; 78:39; 80:31, 37; 81:10; 82:214
platostomus, 59:110; 70:357, 384; 77:57; 78:165; 82:245
platyrhinchus, 71:184; 78:39; 82:13
productus, 71:203, 206; 73:39, 147; 78:39; 80:31; 81:10; 82:13, 245
spatula, 70:357
Lepomis, 73:239; 82:23
auritus, 68:331; 75:50; 78:39; 80:198, 211
cyanellus, 64:374; 66:317, 357; 68:258, 331; 71:203; 72:178, 270; 73:39, 47, 147, 186; 75:88, 91, 95, 133, 140, 205, 215, 224; 76:109, 112, 193, 197, 208, 304, 309, 312; 77:57; 78:66; 80:12, 31, 91, 198, 235; 82:48, 160, 193, 247, 256
gibbosus, 59:110; 60:256; 62:332; 64:179; 65:65, 212; 67:217; 68:271, 356; 69:241; 70:82, 147, 168, 352, 385, 387, 394, 422; 72:178; 74:360; 75:140, 205, 209, 224, 237, 241, 246; 76:27, 32, 65, 72, 109, 114, 304, 309, 312; 77:227; 78:67, 87, 146, 165; 79:56, 113, 122; 80:69, 198; 81:10, 113, 120; 82:35, 48
humilus, 59:110; 71:206; 73:147; 75:133; 80:12; 82:248
macrochirus, 59:110; 60:270; 63:323; 64:179, 374; 65:65, 212; 66:357; 67:241, 272; 68:131, 266, 271, 285, 311, 356; 69:102, 241, 244; 70:147, 199, 335, 385, 387, 470; 71:96, 103, 112, 166, 203; 71:254; 72:63, 77, 99, 178, 204, 270; 73:39, 76, 147, 186, 231, 373; 74:360; 75:36, 50, 57, 84, 93, 140, 175, 205, 224, 234, 237, 240; 76:27, 32, 46, 65, 68, 109, 112, 178, 190, 304, 309, 312, 317; 77:57, 141, 227; 78:39, 66, 83, 104, 146, 165; 79:56, 127, 157; 80:12, 31, 69, 156, 198, 210, 218; 81:10, 162; 82:15, 35, 48, 160, 214, 245, 256
macrochirus X *microlophus*, 79:112
megalotis, 71:206; 73:39, 147; 76:202; 77:57; 78:67; 79:113; 80:12, 31; 82:193, 214, 248
microlophus, 68:267; 71:185, 206; 73:39, 147, 373; 75:85, 89; 78:89; 79:157; 80:12, 211, 221; 82:15, 48
punctatus, 78:39; 82:15
Leptidae, 60:81
Leptocella albida, 76:310
exquisita, 76:310
Leptocerus, 60:81
Leptoceridae, 60:230; 66:255; 81:102, ,105
Leptocottus armatus, 69:180
Leptodora, 60:64; 67:219; 70:350, 438; 72:137; 73:247; 78:18
kindtii, 69:223; 63:380-90; 64:463; 65:64, 68; 67:221; 78:101
Leptophlebia, 60:81; 79:59
deblis, 70:243
guttata, 70:243
mollis, 70:243
volitans, 70:243
Leptorhynchoides thecatus, 63:223; 68:265; 69:271; 70:162, 166-8, 170
Leptothrix ochracea, 66:119
Lernaea carassii, 64:176
elegans, 64:176
Lesions, on blueback salmon, 73:33
Lespedeza cuneata, 82:231, 283
Lethal concentrations, munitions wastes, 73:48
Lethal temperature, brook trout, 70:399
Lethal time, rotenone, 72:274
Lethocerus americanus, 76:109, 112
Leucichthys, 73:39; 75:330; 79:21, 169
alpenae, 59:64; 72:109; 74:144; 76:215
artedi, 60:222; 62:332; 64:231; 67:167, 234; 69:65; 70:162, 183, 395; 73:87, 125; 74:144, 230; 75:282, 306; 76:122, 302, 304; 77:17, 227; 79:30, 180, 191; 80:281
hoyi, 59:64; 60:222; 67:156; 72:109; 74:144, 230; 76:237; 80:57
johannae, 59:64; 72:109; 74:144
kiyi, 59:64; 72:109; 74:89, 143, 230; 76:223, 237; 77:227
nipigon, 60:222; 62:314
nigripinnis, 60:222; 72:109; 74:144
Reighardi, 59:64; 67:167; 72:108; 74:144, 158, 230; 76:237
zenithicus, 59:64; 60:222; 72:109; 74:144; 76:237
Leuciscus, 61:132, 210
elongatus, 59:198
Leucosomus corporalis, 64:458; 68:331; 69:154; 70:313, 317, 393; 71:107, 286; 75:50, 55; 76:111, 316
Leuctra, 70:243, 245; 72:228
decepta, 70:243
hamula, 70:243
sibleyi, 70:243
tenuis, 70:243; 71:221
Leuresthes tenuis, 66:227
Leydigia, 64:152
Libellula, 61:229; 66:255; 76:109, 310
puchella, 61:144
saturata, 61:144
Libellulidae, 60:224, 230; 66:254; 69:250-2
Liberator, for oxygen diffusion, 70:149
Librarian, report of, 59:19; 60:15; 61:16; 62:19; 63:18; 64:19; 66:21; 68:22; 77:288; 79:244; 80:326; 81:304; 82:301
Lice, on brook trout, 67:91
License, fees, fishing, 77:299
fees, in Louisiana, 60:18
issued, 1932-3, 64:101
laws governing in various states, 63:36
quotas, 71:144, 329
monetary value of, 61:21
number sold, 61:21
statistics, 76:21

Life History, alewife, 64:118; 73:398
bass cestode, 61:201
bluntnose minnow, 65:139
broad tapeworm, 64:391
brook trout, 60:101; 62:344
chub, in Washington, 65:143
chub sucker, 65:141
common shrimp, 62:108
crayfish, 65:189; 66:275
cutthroat trout, 81:235
flatworm in minnow, 69:275
forage minnows, 65:139
golden shiner, 65:140
golden trout, 64:259
ling, 69:192
northern pike, 62:323; 71:149
parasitic copepod, 65:334
redbelly dace, 65:141
rock bass, 71:131
sculpin, 81:249
sockeye salmon, 60:262
spotted bass, 61:89
yellow sand shell, 59:219
Light, artificial, effects on spawning brook trout, 80:158
Ligula, 59:200
catostomo, 64:390
intestinalis, 70:165
Lilies, water, 63:282; 75:203
Limanda ferruginea, 81:325
Lime, in pond fertilizer, 68:126; 72:228; 73:264; 76:342
Limnophilidae, 59:258; 60:65; 66:254; 68:271; 71:225; 76:310
Limnophilus, 60:81
Limnea, 59:175
stagnalis, 64:395
Limnocalanus, 77:84
macrurus, 63:388
Limnodrilus, 63:279
Limpets, food of trout, 65:130
Lina interrupta, 75:120
Ling, (see also burbot, lawyer), age and growth, 70:77
depth distribution, 62:332
feeding habits, 62:309
in British Columbia, 64:319
in Prairie provinces, 60:233; 75: 332
life history, 69:192
marketing of, 60:199
migration, 70:394
parasites of, 70:170
recipes for use, 60:200
Lingcod, catch of, 82:324
Lionotopsis anser, 64:447
Lionotus wrzesniowskii, 64:447
Lisa, in Mexican waters, 74:74
Linseed meal, in trout diet, 59:126; 60:136
toxic to bullheads, 61:77
toxic to trout, 63:167
Livecar, molting lobster, 75:267
Liver, in hatchery diet, 59:126, 161, 168; 61:61; 62:116, 191; 63:341; 65:379
beef in hatchery diet, 67:264; 73:66
horse, food in hatchery, 67:269
pork, food in hatchery, 72:30
salmon, food in hatchery, 67:265
sheep, in trout diet, 68:99
fluke, 73:65
hypochlorite preserved, 63:170
storage, vitamin, 77:154
vacuum dried, 63:170
Lizard fish, Hawaiian, 74:267
Lobelis Dortmanna, 64:465
Lobster, catch, 80:355
in Canadian waters, 60:175
fishery conditions, 71:34
interstate transportation law, 62:30
potential yields, 71:65
production of, 61:24
quick freezing, 62:80
rearing equipment, 62:84
tagging of, 75:267
rock, in Mexican waters, 67:258
spiny, in Mexican waters, 74:79
Locusts, food of grayling, 69:246
Lofting tag, 73:324, 334
Log perch, collected with rotenone, 80:37
effect of pollution on, 82:160
food of burbot, 80:56
white bass, 82:214
in Illinois stream, 82:202
in Louisiana, 82:256
in Michigan lake, 76:304
Loligo, 78:94
brevis, 64:157
Lonchocarpus nicou, 69:148
Lonergan report on pollution, 65:29; 67: 24
Longevity, rainbow trout, 63:365
Loosestrife, swamp, 75:203
Loss of fish by irrigation, 71:311
Lota, 66:140
lota, 59:110; 60:199, 233, 258; 62:309, 314, 332; 64:231, 319, 392; 67:155; 69:71, 192; 70:77, 170, 394; 73:29, 87; 75:332; 76:114; 77:86; 79:169; 80:56, 100, 163; 81:129, 263; 82:184
Lotus, 64:370; 76:184
Lotus, in sewage plant pool, 64:446
Louisiana, commercial fisheries, 59:211; 62:333
fish culture in, 59:207
growth rate in impoundments, 82:255
hydrographic studies, 62:336
largemouth bass in, 61:95
legislation, 59:29; 60:19; 62:113; 64:98; 65:39
license fees, 60:18
oil pollution on oysters, 65:293
salt water shrimp, 60:20
shrimp catch, 62:108, 336
size limit on catfish, 60:19
smallmouth bass in, 59:207
spotted bass in, 61:95
Lucilia caesar, 65:388
Lucioperca sandra, 71:116
Lugol's solution, in ulcer disease treatment, 68:146
Lumbriculidae, 71:220
Lumbricus, 60:191
Lungs, in trout diet, 59:126; 61:61; 65: 380
Lutianidae, 74:75
Lutianus blackfordi, 79:142
Lutjanus, 78:94
Lycopodium lucidulum, 64:466
Lygaeidae, 69:251
Lygus, pratensis, 75:120
Lymnaea, 76:308; 80:61, 65
Lymphocystis disease, 74:24
Lyngbya, 66:114; 82:22, 237
aestuarii, 59:182
Lysigonium, 66:119
Lythrurus umbratilus, 73:47

M

Macabi, in Mexican waters, 74:77
Macarela, in Mexican waters, 74:72
Mackerel, catch, 80:353
in Chesapeake bay, 62:47
in trout diet, 62:127; 64:157; 65:383
horse, in India, 78:94
in Mexican waters, 67:258
investigations, 69:32
jack, catch, 82:320
nutritive value, 64:436

pacific, catch, 82:320
sport fishery, 63:335
in Mexican waters, 74:72
potential yields, 71:65
production of, 61:24
spanish, in Mexican waters, 74:76
nutritive value, 64:436
potential yields, 71:67
in Texas waters, 79:139
taxonomy, 80:111
sport fishery, California, 69:117
tagging, 73:321
taxonomy, 80:110, 113, 116
Macrobdella decora, 69:143
Macrocyclops annulicornis, 63:222
Macrodactylus subspinosus, 73:219
Macroderoides flavus, 69:269
Macrodon malabaricus, 65:268
Macronematinae, 73:202
Macronemum zebratum, 75:53
Macropetasma, 73:311
Macropodus opercularis, 64:179
Macrothrix, 64:152
Madtom, aged by vertebrae, 80:175
collected by shocker, 77:60
effect of rotenone on, 80:37
in bass stream, 68:331
in Florida Canal, 82:15
in Illinois stream, 82:193, 202
in Michigan lake, 76:304
mortality, 76:27
Magnesium, in Ontario waters, 60:41
in ponds, 66:111; 73:379
Maine, alewife fisheries, 73:394
legislation, 59:27; 64:98; 65:39
Makaira marlina, 74:76
mitsukurii, 74:76
Malachite green, in disease treatment, 68:180
Malacostraca, 59:175; 60:255-9; 61:211; 63:200; 65:126-7; 69:246-54; 80:78; 81:246; 82:216-7
Malaria, in weedy ponds, 71:341
hazard in impounded waters, 71:87
control, 82:243
Mallomonas, 69:146
Management, alewife fisheries, 73:394
angling resources, 70:18
artificial lakes, 72:204
brook trout waters, 70:232
catfish, 75:136
commercial fisheries, 71:36-73
efficient, of hatcheries, 61:106
farm ponds, 71:340
fish, in relation to kingfisher, 76:97
fish, looking forward, 66:51
Florida fisheries, 78:38
freshwater fisheries, 71:61, 333
Great Lakes Fishery, 66:131
Great Smoky Mountains National Park fish, 68:86
impoundments, 80:9, 194
lakes, 67:120; 71:335; 77:105
largemouth bass, 80:231
lower Columbia river, 78:48
marine fisheries, 71:61, 329
need for water planning, 65:284
new fields, 67:105
Ohio fish program, 67:114
policies, 71:332
pondfish statistics, 76:19
populations, 71:210, 327
problems, western lakes, 71:236
scientific, 63:73
trout, statistics, 76:14
streams, 64:68; 72:151
waters, 69:158; 81:53, 59-60
use of rotenone, 70:80
weed control, 76:177
Mandy, in Brazil, 65:268
Manganese, in ponds, 66:110; 73:377
in relation to productivity, 76:330
Manitoba, angling for grayling, 62:379
arctic grayling in, 62:378
brook trout in, 62:379
fish culture in, 60:119
fishing industry, 60:215
goldeye in, 62:378
lakes and fisheries, 79:18
lake trout in, 62:377
mooneye in, 62:378
native game fish of, 62:377
northern pike in, 62:377
propogation of walleye, 66:277
remarkable production of Lake Dauphin 65:275
Manure, pond fertilizer, 71:366
cow, daphnia culture, 64:135, 207
horse, daphnia culture, 62:168; 64:207
pond fertilizer, 61:117
sheep, daphnia culture, 64:135, 207
pond fertilizer, 61:117, 63:103; 69:260; 73:254, 383; 74:342
March fly, food of lake trout, 81:123
Margariscus, 65:151
margarita, 62:198; 70:164; 74:24; 76:109, 210
Margaritifera vulgaris, 78:94
Mariscus jamaicensis, 79:146
Maritrema medium, 70:168
obstipum, 70:168
Marine fisheries compact, Atlantic States, 71:27, 323, 330
Marked tree siphons, effect on fish, 70:469
Marketing associations, 70:188
Marketing, commercial fish, 70:87, 188; 71:316
Marked fish, atlantic salmon, 69:290
experiments, Lake Michigan, 69:63
Lake Erie, 61:206
recovery, 74:172; 75:36; 76:265
in Russia, 62:395
smallmouth bass, Lake Ontario, 62:380
sockeye salmon, British Columbia, 61:126
striped bass, 62:381
walleye, 68:164
Marking, brook trout fingerlings, 79:80, 85
brook trout, 71:257
effect of, 80:260
fin clipping, king salmon, 77:132
fish, 71:355; 73:108, 320; 74:360
haddock, 71:228
internal tag, 63:306
lake trout, 77:129; 82:68, 179
methods employed in Florida, 79:157
methods, 81:71, 179, 182, 184, 262
sea lamprey, 82:123
trout, 72:157
walleye, 82:37
Marlin, in Mexican waters, 74:76
Marphysa sanguinea, 74:274
Marsilea quadrifolia, 69:205
Martillo, in Mexican waters, 74:73
Maryland, blue crab research, 62:53
Chesapeake Biological laboratory, 62:45, 50
control of fishing intensity, 71:144; 329
Department of Game and Inland fisheries, 71:320
Department of Tidewater fisheries, 71:320
fish culture in, 61:80
fisheries research, 62:50
fishes of, 66:403
fishways, 62:48
hatchery production, 62:48

importance of sport fishery, 66:403
legislation, 59:27; 61:103; 62:27, 364; 63:35; 64:98; 65:37; 70:29; 71:27: 144, 329
production of oysters, 62:50, 51; 63:157
oyster research, 62:50
size of trout for stocking, 61:80
stocking of streams, 60:260
striped bass, 66:225
tagged striped bass, 61:207; 62:381
value of shad, 64:88
Massachusetts, alewife fisheries, 73:395
legislation, 59:27; 64:38, 98; 71:27
menace of starfish on shellfish, 62:76
scallop production, 62:76
summary of fishery research, 63:259
Mastogloia, 74:254
smithii, 64:447
Maturity, age of bloater, 74:239
burbot, 80:168
channel catfish, 80:135
croaker, 70:478
cutthroat trout, 81:243
lake trout, 81:111, 132
rainbow trout, 63:365
sauger, 79:34
sheepshead, 79:51
tullibee, 73:131
walleye, 73:99
whitefish, 77:243
effect of growth rate on, 61:99
length at, burbot, 80:169
channel catfish, 80:136
cutthroat trout, 81:243
kiyi, 74:133
lake trout, 81:134
northern pike, 71:156
walleye, 63:348
yellow perch, 70:120
Maxillary tag, 74:360
Maxillipedo, 73:313
Mayfly, food of atlantic salmon, 65:153
black nose dace, 64:73
brook trout, 60:73; 63:186; 64:73, 340; 65:127; 70:231
brown trout, 71:107
bullheads, 64:74
channel catfish, 67:220
cutthroat trout, 63:199
fishes, 63:178
grayling, 68:190
horned dace, 64:73
largemouth bass, 66:253
ling, 69:195
mimic shiner, 67:222
mooneye, 67:216
pumpkinseed, 67:217
rainbow trout, 62:139; 64:342; 65:126; 66:197
redhorse, 67:218
sand shiner, 67:223
sculpins, 66:375
silver chub, 67:217
smallmouth bass, 68:330; 70:314
spottail minnow, 67:221
spotted bass, 62:255
trout, 63:255
whitefish, 68:162
in bottom fauna, 60:187; 61:50; 64:241; 66:183; 71:170; 72:36, 56; 73:200; 81:210-15
in hatchery pond, 62:174
in Lake Erie, 63:278
in Quebec Lakes, 62:198
in Virginia stream, 63:252
lethal dosage of arsenic, 61:229
production in trout stream, 68:232
Meal, fish, experimental production, 73: 150
Measurement, fish scales, 74:59
Measurements, hatchery fish, 70:275; 71: 292; 74:19
Meat meal, hatchery food, 63:167; 65:161, 380
Mechanical removal of pond weeds, 71:94
Megaceryle alcyon, 76:97
Megacyclops leuckarti, 78:103
Megalodonta beckii, 75:203
Megalops atlanticus, 79:139
Megaloptera, 60:65
nodosa, 67:256
Megastomatobus, 70:384
cyprinella, 63:320; 73:39; 75:116; 78: 165; 82:245
Megilla maculata, 75:120
Melanoplus differentialis, 75:120
femur-rubrum, 75:120
Melantho, 75:116
Melosira, 60:254; 74:254; 75:328; 77:84; 78:135
Melts, as hatchery food, 65:380
pork, in trout diet, 68:99
Members, honorary, election of, 80:319; 82:330
Membership, list of in attendance at meeting, 60:11; 61:11; 62:13; 63:13; 66: 15; 67:15; 68:15; 69:15; 70:15; 71:15; 82:292
Membership, list of, 59:280; 60:332; 61: 288; 62:403; 63:421; 64:475; 65:410; 66:450; 67:294; 68:376; 69:308; 70: 494; 71:374; 74:377; 76:451; 77:345; 78:261; 79:315; 80:375; 81:359; 82: 361
Membership, report of committee on, 77: 287; 81:327; 82:328
Membras vagrans, 79:141
Menhaden, catch, 80:352; 82:321
food of kingfisher, 76:111
striped bass, 66:225; 67:81
in hatchery diet, 64:157
potential yields, 71:66
production, 61:24
relation to conservation, 79:137
Menominee, catch, great lakes, 63:301
Menticirrhus, 79:139, 141
Mercurochrome, disease disinfectant, 73:36
Mercurous chloride, in disease treatment, 63:172
Merganser, trout predator, 62:247
Merismopedia, 60:254; 74:254; 82:22
tenuissima, 66:119
Merluccius bilinearis, 64:157; 66:415; 81: 325
capensis, 77:75
Mero, in Mexican waters, 74:75
Mesocyclops, 75:170
obsoletus, 65:108; 69:143
Metabolism, fish, 63:215
Metapenaeus, 73:311
Metaphen, disinfectant, 73:36
Meteorology, effect on fisheries, 64:382
Meteorological factors in growth, 77:225
year classes, 77:197
Methods, anesthetic for trout, 65:339
application of copper sulfate in lakes, 69:148
application of rotenone, 69:154
application of sodium arsenite for weed control, 61:146
aerating device in transporting fish, 69:296
artificial fertilization of eggs, 62:392
bacteriological, in determining freshness of haddock, 64:402

bottom fauna sampling, 64:238; 69:180
collecting oyster spat, 69:263
creel census, in California, 69:125
determination of food grade in streams, 68:336
dipper feeding in hatcheries, 65:308
disease treatment, 65:332
egg counts, 64:308
electric shocker, 69:210
estimating areas of section, 69:232
estimating fish population in stream, 69:231
factoryship, 66:427
fish culture, hatching fry in gravel, 66:279
fingerling counting, 64:270
fry counting, 64:270
handling muskellunge eggs, 64:313
handling muskellunge fry, 64:314
hatchery feeding, 64:159
hatchery food preparation, 64:158
marine sport fishery statistics, 63:332
measuring pollution in freshwater streams, 65:240
oxygen consumption, 63:208
oyster farming, 62:72
pollution analysis, 60:314
scale analysis, 64:103
simplified disease treatment, 68:178
spawn taking, 61:205; 69:192
standard for computing bass production, 64:163
statistical on Great Lakes Fisheries, 63:292
sterilization of graveled raceways, 66:283
stocking trout by air, 65:277
stomach analysis, 63:183; 65:129
taking trout stomachs, 63:183
transporting trout, 68:344
Methylene blue, in disease treatment, 73:36
Methyl mercaptan, toxicity of, 79:59
Metric System vs. English system, in fishery work, 75:157
Mexico, commercial fisheries, 74:71
Don Martin Reservoir, fishery problem, 66:63
fishery mission to, 71:34
Micrasterias, 61:211; 65:107; 69:146; 82:22
Michigan, beaver-trout management, 65:253
brush shelters in lakes, 63:409
button clam industry, 66:406
cannibalism in bass ponds, 66:242
catch of cisco, 60:204
crayfish as weed controllers, 61:149
creel census, 60:184; 65:207; 66:87, 324
effect of drought on fish, 64:57
fish conveyor for dam, 66:411
fish culture, mechanical devices in, 62:179
fish diseases in, 60:185
fisheries research in, 60:182
fishes, growth of, 76:63
food habits, largemouth bass, 66:242
trout, 59:146
goitre in trout, 59:164
gravid periods in mussels, 66:406
growth rate, brook trout, 66:203
golden shiner in ponds, 66:248
largemouth bass, 66:242
rainbow trout, 63:361
studies, 60:186
lakes, fertilization of, 78:145
improvement, 60:185; 63:408
survey, 66:128
winter mortality, 76:23
legislation, 59:27; 64:98; 65:39; 71:28
migration of brook trout, 66:203
migration studies, 60:185
planting trucks, 62:181
population of brook trout in stream, 66:203
predators, 63:229
studies on, 60:185
propogation, forage fish, 65:132
trout, 59:234
research in progress, 63:27
returns on tagged fish, 66:319
rotenone experiments, 75:139
smelt mortality, 74:310
spawning of grayling, 62:177
kiyi, 64:159
trout, 62:239
stream control commission, 64:92
stream improvement in, 60:185; 61:48; 63:404; 66:177; 75:270
summary of research, 63:259
trout streams, effect of deflectors, 76:248
sea lamprey problems, 76:160
Microbenthos, in food chain, 74:262
Microcaddis, food of trout, 81:210
Microcylloepus pusillus, 75:53
Microcrustacea, food of alewife, 64:121
brook trout, 65:127
cutthroat trout, 63:199
rainbow trout, 65:126
in decaying vegetation, 71:99
Microcystis, 60:254, 255, 256, 257; 64:423; 65:118; 73:35; 74:254; 78:15; 82:106
aeurginosa, 62:281; 66:119
flos-aquae, 66:119
paradoxa, 64:447
Microgadus tomcod, 64:157
Microperca m. microperca, 76:304
Microphallidae, 70:167, 168, 170
Microphallus ovatus, 69:271
Micropogon undulatus, 66:403; 67:81; 70:475; 79:47, 141
Microptcrus, 68:132; 78:39; 80:60
coosae, 82:327
dolomieui, 60:53, 270; 61:83; 62:332; 65:212; 66:317, 352, 357; 67:271; 68:258, 322, 356; 69:149, 169, 241; 70:168, 172, 183, 195, 311, 352, 384, 387, 406; 72:77, 189, 197, 233; 73:19, 87, 184, 373, 377; 74:338; 75:20, 43, 50, 55, 116, 140, 237, 241, 248, 306; 76:65, 80, 110, 114, 165, 304, 315, 318; 77:57; 78:146; 79:24, 105; 80:47, 65, 88, 198; 81:10, 290; 82:34, 160, 251, 327
pseudoplites, 61:83, 86, 89, 95; 63:221
punctulatus, 70:184; 71:203; 73:39, 147, 373; 80:4, 12, 15, 31, 198; 82:160, 193, 245, 255, 327
salmoides, 59:110, 150, 199; 60.256, 270; 61:83; 63:208, 215, 323; 64:374; 65:66, 212; 66:367; 67:241; 68:173, 265, 356; 69:102, 169, 220, 241, 257; 70:82, 183, 195, 335, 384, 387, 469; 71:96, 99, 103, 166, 184, 203; 72:63, 68, 77, 101, 178, 189, 197, 204, 270; 73:39, 76, 147, 185, 262, 274, 373; 74:360; 75:50, 57, 65, 84, 88, 105, 205, 216, 224, 237, 241, 250; 76:27, 46, 65, 78, 110, 178, 304, 309, 316, 320; 77:39, 57, 141; 78:66, 83, 146, 163, 165; 79:21, 56, 122, 127, 155, 191; 80:4, 12, 15, 47, 91, 154, 182, 198, 210, 218; 81:10; 82:15, 34, 48, 160, 214, 245, 255, 327
Microspora, 59:184; 66:345; 82:22
Midges, food for atlantic salmon, 65:153

blacknose dace, 64:73
bluegill, 69:246; 73:232
brook silverside, 67:219
brook trout, 60:65, 73; 63:186; 64:73, 340; 65:127, 153; 71:220
brown bullhead, 69:206
brown trout, 71:107
bullhead, 64:74
channel catfish, 67:220
cutthroat trout, 63:199
grayling, 68:190; 69:246
horned dace, 64:73
lake trout, 67:167
largemouth bass, 66:253
ling, 69:195
mimic shiner, 67:222
mooneye, 67:216
rainbow trout, 62:139; 63:255; 65:126; 66:197
redhorse, 67:218
sand shiner, 67:223
sculpins, 66:375
silver chub, 67:217
smallmouth bass, 68:330; 70:321, 324
spotted bass, 62:187
spottail minnow, 67:221
white bass, 63:380
lethal dosage of arsenic, 61:229
in bottom fauna, 60:187; 71:170
in coastal lagoon, 69:180
in Quebec lakes, 62:198
production in trout stream, 68:232
propogation in ponds, 64:206
Migration, alewives, 73:416
atlantic salmon, 64:225, 351, 360; 69:290
brook trout, 60:101; 66:203; 67:224; 70:254
brown trout, 73:209
cisco, 67:240
crappie, 80:9
croaker, 70:478
mullet, 81:69, 74
northern pike, 71:153
pacific herring, 63:289
pike fry, 80:68, 82
planted fish, 68:204
rainbow trout, 63:80; 71:180
salmon, Sacramento River, 70:58
salmon fry, 69:238
salmonids, 82:139
silver salmon, 69:180
sockeye salmon, 61:122; 65:204
steelheads, 64:248; 69:180; 70:61, 211
striped bass, 67:67; 68:364
tagged fish, 61:346; 73:163
trout, 63:308; 74:44, 168; 79:87
walleye, 68:163
white bass, 80:9
effect of freshets, 75:257
factors affecting downstream, sea lamprey, 81:278
Lake Michigan experiments, 69:69
fishes and dams, 71:301
index, 79:88
marked fish, 79:158
rate of, 73:341
shallow to deep lake, 70:391
smelt mortality, 74:319
streams, 68:256
studies in Michigan, 60:185
studied by weirs, 73:70
trap for salmon, 75:97
Milk, in trout diet, 62:127
Milk, dried, in hatchery diets, 59:126, 161; 62:233; 63:167; 65:161, 305, 310; 67:264; 68:99; 71:363
Milkfish, in Hawaiian waters, 74:250
in India, 78:94
in Mexican waters, 74:74
in Philippine waters, 79:262
Millipedes, food of brook trout, 60:65, 73; 63:185
rainbow trout, 66:197
Milt, whitefish fertility experiment, 61:205
Mineral requirements, in trout diet, 61:61
Mines, abandoned, sealed, 65:31
Mink, marks on fish, 63:231
Minnesota, carp planted in, 59:225
catfish, Mississippi river distribution, 61:240
chemical analysis of ponds, 66:104
distribution, brook trout, 61:240
channel catfish, 61:240
walleye, 61:240
fish culture, 59:224; 61:240
fish production, ponds, 66:116
fish populations, 78:163; 79:195
legislation, 59:27; 61:104; 64:98; 71:28
muskellunge, rearing of, 59:205
number of eggs of whitefish, 61:245
number of lakes, 59:224
plankton in ponds, 66:114
planting of fish in, 61:242
pollution of Lake Pepin, 59:158
rearing lake trout to maturity, 63:64
trout streams, 76:204
Minnow committee, tri-state, 77:296
Minnows, as bait, 65:216
daphnia as food of, 61:134
eating smallmouth bass fry, 65:142
food of kingfisher, 76:105
food of spotted bass, 62:186
food of trout, 59:150
forage experiments, 76:46
habitat of, 61:132
hatchery food, 65:390
index to suitable water, 62:290
in pond culture, 59:87; 62:114
loss in dealers tanks, 59:198
need for restricting commercial seining, 59:229
parasites in, 59:198
predator on trout eggs, 62:247
propogation, need for 61:131
rearing, 64:94
attractive, in bass stream, 68:331
flatworm in, 69:273
food of smallmouth bass, 70:313
blackfin, effect of pollution on, 73:47
blackhead, breeding season, 61:136
D.D.T. treatment, 76:317
forage in bass pond, 59:90
production of, 61:136
bluntnose, culture, 63:54
effect of D.D.T., 75:48, 55; 76:316
effect of pollution, 73:47; 78:58, 64; 82:160
effect of rotenone on, 70:82
environment of, 59:253
flatworm in, 69:273
food of, 65:57
food of brown trout, 71:107
lake trout, 81:113, 125
largemouth bass, 62:204
northern pike, 80:69
rainbow trout, 76:304
smallmouth bass, 70:313
in bass stream, 68:331; 82:193
in Canadian marsh, 70:422
in pond, 75:88
in trout stream, 76:259
index species, 62:290
killed by rotenone, 70:144; 82:173
life history, 65:139
parasites on, 64:179; 70:167
propogation, 64:94; 65:132
stocked in lake, 75:201; 78:65

survival, 67:128
brassy, food of northern pike, 80:69
parasites of, 70:166
bullhead, food of white bass, 82:214
in Missouri waters, 82:247
chub, parasites of, 71:286
emerald, food of small fishes, 60:163
fathead, breeding of, 62:382
culture of, 63:55
effect of pollution on, 82:160
effect of rotenone on, 82:173
flatworm in, 69:273
food of bass, 80:155
lake trout, 81:113, 115, 125
white bass, 82:214
forage fish, 72:178
in Canadian lake, 75:330
in Manitoba, 79:20
in Ohio stream, 66:317
in ponds, 75:92
in small lakes, 67:122
in trout stream, 76:250, 259
index species, 62:290
propogation, 64:94; 65:132
mud, anabiosis, 62:340
in Canadian marsh, 70:423
in Michigan lake, 75:205, 223; 76:304
effect of rotenone on, 68:271
food of Kingfisher, 76:105
in Michigan trout stream, 76:250
killed by rotenone, 70:82, 144; 72:270; 75:38; 76:27
food of northern pike, 80:66, 80
population in streams, 68:285
population study, 72:194
propogation, 61:132
survival, 67:127
pearl, parasites of, 74:24
plains, food of white bass, 82:214
redside, in Washington, 65:145
rosyfaced, food of brook trout, 60:66
food of smallmouth bass, 70:213
in bass stream, 68:331
silverjaw, effect of pollution on, 82:160
silvermouth, effect of pollution on, 73:47
silverside, food of cutthroat trout, 63:202
silvery, artificial propogation, 71:215
food of brown trout, 71:107
in Louisiana waters, 82:256
silverling, D.D.T., effect of, 75:50, 55; 76:316
spottail, flatworms in, 69:273
food of, 67:221
in bass stream, 68:331
in Canadian lake, 75:330
steelcolor, effect of pollution on, 73:47
stoneroller, parasites of, 66:358
spawning of, 65:148
strawcolored, food of smallmouth bass, 70:313
suckermouth, effect of pollution on, 82:160
top, effect of pollution on, 73:47
Minytrema melanops, 59:110; 70:384; 73:39, 76; 80:12, 37; 82:245, 256
Miridae, 69:251, 253
Mississippi, legislation, 59:27; 62:28; 64:38, 98
shrimp catch, 62:108
Mississippi River, cooperative fishery survey, 76:279
depletion of resources, 60:279
fish salvage, 60:282
Lake Keokuk, water supply, 66:69
pollution, 60:286; 62:356
sheepshead, growth of, 79:43
Missouri, condition of streams, 61:119
effect of drought on fish, 64:57
farm ponds, 82:281
Lake of the Ozarks, fishery problem, 66:63
largemouth bass, 61:119
legislation, 59:271; 64:98; 65:39; 70:28
rainbow trout, propogation, 61:119
natural spawning, 61:246; 64:167
smallmouth bass, propogation, 61:120
Missouri River Basin, symposium, 76:359
Mites, food of atlantic salmon, 65:153
bluegill, 69:246
brook silversides, 67:219
channel catfish, 67:220
grayling, 69:246
largemouth bass, 66:253
mimic shiner, 67:222
spottail shiner, 67:221
trout, 71:222, 255
in bottom fauna, 69:191; 73:200
Moapa coriacea, 80:87
Modiola, 64:157
Moina, 59:99; 60:191; 63:133
macrocopa, 78:103
Moisture, taste of wild vs. reared trout, 75:184
Mojarra, in Mexican waters, 74:76
Molliensia, 72:70
latipinna, 74:255, 265, 268; 82:15, 22
Mollusca, 59:146, 175, 259; 60:64, 187, 191, 227, 230-5, 254; 63:200, 255; 64:74; 65:126; 66:197; 67:167; 68:161; 69:180, 195, 246; 71:278, 330; 73:233; 74:71; 80:57, 61, 65, 102, 104; 82:25, 27, 28
Molva molva, 62:314
Molly, sailfin, food of, 82:22
Monas, 64:447
Monochlorbenzene, weed control, 76:179
Monostyla, 59:100; 61:211; 69:152
quadridentata, 66:124
Montana, legislation, 59:27; 64:98; 65:39; 70:28
spawning of rainbow, 64:167
trout diet, 59:168
Mooneye, catch, 72:214; 72:39; 77:17, 23
food of, 62:378; 67:215
killed by rotenone, 80:37
in Manitoba, 62:378
Moonlight, effect on fishing, 73:52
Morone americana, 65:109, 298; 67:181; 69:143; 70:352; 72:136; 73:367; 75:118
chrysops (see also *Lepibema*), 61:83; 82:106, 213, 245
interrupta, 61:83; 68:244; 71:206; 73:39, 147; 79:192; 82:91
Mortality, brook trout fry, 60:172
brook trout in stream, 67:91; 70:371; 378
brown trout, 73:219
bluegill, 80:218, 228
caused by high tension carbon dioxide, 67:280
caused by oxygen supersaturation, 71:112
caused by rotenone, 68:272
causes of, in Atlantic Salmon after spawning, 64:219
causes of, in lake, 69:189
cutthroat trout, 74:286
cyanide toxicity, 78:192
due to algae, 64:416; 75:175
due to columnaris, 73:35
due to tagging, 70:463; 79:163; 80:4
effect of hooks on 63:288
effect of temperature on, 70:68, 339, 400
eggs, 62:315; 66:59; 77:73; 80:68
factors causing, in fishes, 67:271
fingerlings, lake trout, 77:129
frozen fish, 62:340
fry, 62:315
furunculosis, 75:189; 76:84, 88, 93; 78:182

gaspereau, 67:91
grayling in hatchery, 62:175
hatchery reared trout, 81:37
herring eggs, 64:311
in Niagara River, N. Y., 68:246
largemouth bass, 80:218, 226
marking, 80:2, 4; 81:17
percentage loss eggs, fry, fingerling, in hatchery, 69:85
planted trout, 74:52
rainbow trout, 73:117
rate, calculation of, 79:172
cisco populations, 79:180
estimate of, 82:62
Jackson method, 82:63
little exploited populations, 77:114
by tagging, 73:341
salmon in hatchery, 67:266; 69:133
seasonal changes, 73:117
smallmouth bass, 65:311
smelt, 74:310
sockeye salmon, 61:122
trout in hatchery, 67:268
in stream, 74:168
under diet, 61:63; 68:109
sulfamerazine treatment, 77:97
variable, 80:226
ulcer disease, 70:371, 378
winter, Michigan lakes, 76:23
Mosquitos, food of spotted bass, 62:187
effect of D.D.T., 75:52
hazard, in impoundments, 71:87
in Quebec lakes, 62:198
Mosquito fish, distribution, 61:208, 213
food of, 61:208; 82:24, 26
food of spotted gar, 82:20
food of white bass, 82:214
habitat of, 61:208
in Florida lakes, 71:185
in Nevada, 73:184
killed by rotenone, 82:173
parasites of, 61:208
predator on mosquito larvae, 61:209
spawning, 61:209
Moss, spawning bed in, 65:141
Moths, food of brook trout, 60:73; 63:189
brown trout, 71:110
cutthroat trout, 63:199
grayling, 68:190
smallmouth bass, 70:321
Mougeotia, 59:174; 82:22
Mouse, food of cutthroat trout, 63:200
Movement, fish in a trout stream, 81:260
trout in lake, 82:68, 180
walleye, 81:179
planted trout, 82:274
sea lamprey, 82:123
yellow perch, 81:150
Mozostoma, 60:215; 63:71; 75:116; 76:101, 112; 77:55, 57
anisurum, 73:39; 75:133
aureolum, 59:155; 60:254; 66:317, 357; 67:218; 68:258; 73:47, 76; 75:133; 76:165; 78:165; 82:245
breviceps, 73:39
congestum, 70:360
duquesnii, 80:37; 82:245
erythrurum, 75:133; 79:129; 82:160, 193, 245
Lesueurii, 59:110
poecilurum, 80:31, 36
Mucket, gravid period, 66:406
Mud cat, effect of tag on, 63:321
in sewage plant pool, 64:446
Muddler, food of, 60:258
food of lake trout, 67:167
lawyer, 60:259; 67:170
merganser, 66:337
trout, 59:150
in Manitoba, 75:330
in Michigan stream, 81:227
in Montana, 81:236, 239
in Ontario, 59:259
population in stream, 68:285
predation on eggs, 62:246
Mudfish, sale permitted, Florida, 77:300
Mudpuppy, in walleye pond, 73:259
predation on cisco eggs, 67:242
Mugil, 70:361; 78:94; 79:141
capito, 74:251
cephalus, 74:74, 250, 262, 267; 81:69, 219
curema, 74:74; 81:69
dobula, 81:76
Mullet, food of, 74:250, 262, 267
food of Texas fish, 79:141
in Mexican waters, 74:74
nutritive value, 64:436
potential yields, 71:67
tagging of, 73:321; 81:69
Australian, migration, 81:76
black, tagged, 81:69
grey, in Israel ponds, 81:219
silver, catch, 73:39
tagged, 81:69
striped, effect of electricity on, 61:181
tagged, 81:69
Mummichog, in trout pond, 81:45
Mundt pollution bill, 70:37; 71:43
Municipal lakes, 71:313
Munitions waste, lethal concentrations, 73:48
Muriate of potash, fertilizer, 70:336; 73:388; 74:342
Musculium, 59:259; 60:191; 67:167; 68:162; 69:254; 70:321
Muskellunge, catch in New York lake, 67:134
culture of, 64:313
fingerling planting, 59:203
food of, in hatchery pond, 59:203
fry planting, 59:203
in Ontario, 75:20
in Tennessee, 68:244
in Wisconsin lake, 82:34
length-weight relationship, 77:42
predators, 70:424
production in some Wisconsin lakes, 66:308
propogation of, 59:202; 70:421; 79:247
problem of rearing in Ontario, 60:47
shed teeth, 65:262
trapped by algae, 73:59
Musk grass, in Quebec lakes, 62:198
in sewage plant pool, 64:446
Mussels, artificial propogation of, 59:217
food of sculpins, 66:374
gravid period, 66:406
in bottom fauna, 60:191
planted in sewage plant pool, 64:446
blue, as hatchery food, 64:157
saltwater, as fertilizer, 62:317
three-rib, gravid period, 66:406
Mya arenaria, 60:269
Mycteroperca, 74:75
venadorum, 67:258
Mycetophilidae, 63:383; 65:66; 67:216, 222
Mylocheilus caurinus, 65:143; 69:198
lateralis, 64:319
Mylopharodon conocephalus, 70:61
Myriapoda, 66:197
Myriophyllum, 59:177; 64:94; 70:382; 76:180, 345; 82:16, 24, 110
spicatum, 64:370, 464; 65:124; 76:303
Myrmeleon, 75:120
Mysis, 66:139, 377; 74:155; 80:57, 61
relicta, 60:223-4, 229-30, 235; 67:167; 74:236; 78:180; 79:24, 26; 80:65
sepulchralis, 70:243; 76:310
Mystrophora americana, 71:221, 225; 72:36
Mytilus edulis, 62:317; 64:157

Myxobolus inornatus, 68:173
***Myxophyceae*, 59:176, 184; 82:16, 22, 23,** 25, 27, 28
Myxosporidia, 70,166, 170; 74:23

N

Nabidae, 67:216
Najas, 59:177; 64:182; 75:118; 82:16
  flexilis, 64:465; 72:136; 73:379; 75:203; 76:303
  guadalupensis, 71:95, 166; 79:146
Nainereis laevigata, 74:274
Napthol, in disease treatment, 63:172
National planning council of commercial and game fish commissioners, 64:24; 65:25
Natrix sipedon, 70:423; 75:58; 76:167
Natural spawning, efficiency of, 74:200
Navicula, 60:254; 66:114, 119; 74:254, 272; 82:22
Navigation, relation to fish and game, symposium, 76:359
  relation to wildlife, 77:253
Neascus, 69:273; 70:164
  ambloplites, 63:221; 68:265-7; 70:164
  van-cleavei, 63:221; 68:265-8; 70:164
Nebraska, effect of drought on fish, 64:59
  legislation, 59:27; 64:98
Necrosis, in columnaris disease, 73:34
Necturus maculosus, 67:242; 73:259
Nelumbo, 76:187
  lutea, 64:446; 76:184
Nematistius pectoralis, 74:77
Nemathelminthes, in bait minnows, 69:200
Nematoda, 60:191; 61:211; 63:223; 64:390; 66:344, 357; 67:220; 68:232, 265; 72:56; 73:200-1; 74:254; 82:205, 208
Nemoura, 71:221; 72:37; 81:210
  venosa, 70:243
Neoechinorhynchus, 70:163-4
  cylindratus, 63:223; 68:265-7; 69:271; 70:168
  tenellus, 69:271
Neogomphoides obscura, 76:310
Neomysis mercedis, 69:180
Neopanopeus texana, 64:158
Neoperla clymene, 75:53
Neophasganophora capitata, 75:54, 120
Nephelopsis obscura, 66:344
Neophylax, 60:81
Nepidae, 60:66
Neoplanorbis, 59:175
Neothremma, 80:102, 105; 81:253
***Neothunnus*, 80:113**
  macropterus, 67:257; 74:72
Nephrocytium, 82:235
Neophylax autumnus, 71:225
Neptunus gladiator, 78:94
Nereis, 66:404; 74:268
  virens, 63:211
Nests, artificial, for bass, 63:26
  floating, for bass, 63:62
  in impoundments, 71:90
  location of, smallmouth bass, 60:55
Nets, catch, Great Lakes, 63:301
  experimental, efficiency, 74:237
  gill, cisco, 74:92, 145
    lake trout in chub nets, 59:75
    mesh size, chub nets, 59:65
    minimum mesh size, Great Lakes, 66:60
    recommended mesh size, Great Lakes, 64:109
    setting in New York Lakes, 62:331
    used in Prairie Provinces, 60:217
  hoop, for catching walleye, 59:202
  in Lake Ontario, 74:234
  plankton, type and efficiency, 62:292
  pound, herring in, 59:79
  preservation of, 63:32
  size of mesh, problem of, 60:19
  used for cisco in Lake Erie, 60:204
  whitefish in Minnesota, 59:230
Netopus sigmoides, 64:447
Neureclipsis, 70:328
Neuronia, 60:81
Neuroptera, 60:192; 66:183; 71:109; 81:245; 82:204-9
Nevada, introduced fishes, 73:173
  legislation, 59:27; 64:98; 65:39
New Brunswick, fertilization of ponds, 62:317
  planting of fry, 60:118
  research in progress, 63:27, 260
  spawning of brook trout, 64:356
New England, alewife fisheries, 73:394
  haddock production, 62:59
Newfoundland, age and growth Atlantic Salmon, 66:211
  atlantic salmon in rivers, 66:211
New Hampshire, alewife fisheries, 73:395
  creel census, 66:313
  diet of salmon and trout, 64:155
  growth of brook trout, 64:156
  legislation, 59:27; 64:98; 65:37; 71:27
  research in, 63:28, 261
  spawning of rainbow trout, 64:167
New Jersey, bass culture, 62:167
  daphnia in hatchery, 62:167
  legislation, 59:25; 64:98; 71:27
  plankton production, 62:168
  selective breeding, trout, 62:129
  trout distribution, 62:127
  trout production, 62:126
New Mexico, Elephant Butte Reservoir, 66:69
  legislation, 59:27; 64:98
  quantity food used in hatchery, 65:399
Newt, spotted, in Quebec, 64:425
  caught in trap, 82:148
New York, brown trout experiments, 65:258
  catch of cisco, 60:204
  chemical characteristics of lakes and ponds, 64:189
  cooperative fish propogation, 63:151
  cost of hatchery food, 64:172
  depth distribution of fish, 62:331
  distribution of *Gammarus*, 60:96
  European pearl roach in, 63:60
  fishing in Sacandoga Reservoir, 61:140
  legislation, 59:27; 64:38, 98; 65:39; 70:28; 71:27
  new hatchery, 64:132
  pollution abatement, 62:29
  research in progress, 63:28, 261
  spawning of stoneroller, 65:148
  stream improvement, 65:316
  trout stream management, 64:68
Niacin, requirement of trout, 77:152
Nicotine, pollution in Connecticut, 61:160
Nigronia serricornis, 75:53
Nitocris, 70:321
  carinatus, 68:325; 75:55
Nitella, 59:177; 64:465
Nitric acid, in munitions plant waste, 73:45
Nitrogen, cause of mortality, 71:116
  content variations, 74:338
  fertilized ponds, 73:262
  Holston River, 73:204
  in aquatic plants, 65:186
  in Minnesota ponds, 66:113
  in natural ponds, 73:257
  in Ontario waters, 60:41
  Lake Erie, 63:273
  limiting factor in productivity, 82:281, 283
  nitrate, in fish pond, 74:346

nitrite, in fish pond, 74:343
and phosphorus concentrations, farm ponds, 82:281
pond fertilizer, 76:348
presence in water, 59:94
rearing ponds, 73:254
relation to productivity, 76:328
utilization cycle, 76:349
Nitzchia, 74:254; 79:226
Nocomis biguttatus, 59:198; 65:134; 76:208
Nominations, see under Committee
Nomograph, for growth computation, 78:152
Norris Reservoir, effect on river, 71:81, 91, 299
growing season of fish, 70:183
growth of bluegill, 73:195
harvestability of fish, 80:46
investigations on 68:63
water temperature, 70:186
North American Committee on Fishery Investigations, 59:32; 62:23; 63:21; 64:22; 65:24; 66:24; 69:43; 71:33
North American Fish Policy, 68:39
North Atlantic Lobster conference, 71:34
Northeastern division, report of, 82:301
North Dakota, legislation, 59:27; 63:35; 64:98
North Carolina, fishing pressure, 79:251
legislation, 59:27; 64:38, 98; 65:39; 71:28
pollution of Currituck Sound, 62:31
pollution abatement, 62:359
shrimp catch, 62:108
North Pacific Sealing Convention, 62:22
North Sea convention, signed, 67:22
Norway tag, round, 73:324, 336
Nostoc, 65:124, 126, 127; 76:350
Notemigonus crysoleucas, 59:110, 200; 60:254, 270; 61:132; 62:204, 290; 63:380, 383; 64:94; 65:62, 109, 132, 212, 298; 66:244; 67:181; 68:271, 285; 69:102, 257, 273; 70:82, 144, 165, 359, 422, 470; 71:96; 72:101, 178, 208, 270; 75:50, 57, 92, 95, 133,201, 205, 223; 76:27, 32, 47, 61, 109, 113, 304, 312; 78:68, 83, 102; 80:69; 82:15, 53, 160, 214, 256
Notholca, 78:15, 141
striata, 66:124
Notonecta, 66:267; 69:122; 70:360; 73:259
insulata, 68:193
undulata, 62:162; 69:251; 76:310
Notonectidae, 60:66; 69:248, 250
Notopterus, 78:94
Notropis, 60:216; 61:132; 76:111, 312; 80:60, 64
amoenus, 68:331; 69:273; 70:313; 75:50, 52, 55; 76:316
analostanus, 80:198
ardens, 82:169
atherinoides, 59:110, 199-201; 63:26, 380, 388, 390; 67:155; 68:247; 75:126, 133; 76:113; 78:200; 79:58, 60; 82:247
blennius, 75:133
cornutus, 59:198, 254; 60:66, 254; 61:215; 64:179; 65:134; 66:357; 68:258, 271; 70:165; 71:107; 72:178, 270; 75:55, 88, 126, 133; 76:109, 165, 208, 304, 312; 78:131; 80:69; 81:113, 115, 120, 290; 82:160, 199
deliciosus, 67:222; 75:116, 126, 132; 82:160
dorsalis, 75:126, 133; 76:208
heterodon, 59:110; 70:422; 72:178, 270; 76:27, 32, 304, 309, 312; 80:69
heterolepis, 63:390, 67:122; 70:144, 165, 423; 72:178, 270; 80:69; 81:115
hudsonius, 59:110, 200; 63:380; 67:221; 68:331; 69:273; 70:313; 75:330; 76:113; 80:69, 198
lutrensis, 70:359; 82:167, 214
percobromus, 82:214
photogenis, 82:160
potteri, 82:214
rubellus, 60:66; 68:331; 70:313; 75:126, 133; 79:58; 80:69; 82:160
stigmaturus, 80:37
spilopterus, 75:49, 52, 55, 116, 126, 132; 76:208, 316; 79:58, 60; 82:160
stilbius, 80:37
topeka, 75:133
umbratilis, 76:208; 82:199
venustus, 82:214, 247
volucellus, 59:200; 67:222; 75:38; 76:304, 308, 312; 80:69; 82:160, 214
whipplii, 59:200
Noturus flavus, 63:390; 65:66; 76:208; 80:100, 175
Nova Scotia, fish removed by copper sulfate, 65:101
jelly fish invade coastal waters, 65:279
physiography and oceanography of scotian shelf, 66:237
population study in Lake Jesse, 65:297
salinity of coastal waters, 65:280
temperature of coastal waters, 65:280
Noxious fish, removal, 70:80, 382
Nuphar advena, 70:363; 72:279; 75:203; 76:303
Nuisances, aquatic, control, 77:296
Null hypothesis, 71:125
Nursery waters, 63:77
Nutritional anemia, 74:81
Nutrition, factor H, 60:128, 130, 141; 66:291
fat used by brook trout, 65:361
requirements of brook trout, 59:126; 60:127, 140, 146; 63:167; 65:359
requirements of trout, 61:58
value of crabs, 65:342
value of fish foods, 64:436
value of fish meals, 64:293
Nyctiophylax vestitus, 70:243
Nymphaea, 59:177; 60:68; 69:145; 71:185; 79:150
advena, 62:198; 64:466; 67:179; 78:64
macrophylla, 79:146
microphylla, 64:466
odorata, 75:203; 76:303; 78:146
Nymphozanthus advena, 68:205
Nyphulinae, 73:202

O

Oats, rolled, food of sockeye salmon, 62:233
Oceanography, education for, 70:129
and fisheries, 64:382
Scotian shelf, 66:237
Octobothrium, 70:166
sagittatum, 70:164
Octomacrum lanceatum, 70:163, 165
Octomitiasis, 59:195; 60:110; 70:297
Octomitus, 72:32; 74:23; 76:16, 18
salmonis, 63:172, 242; 65:290; 66:343; 68:236; 70:271, 297, 444; 76:94, 96; 77:98
Octospinifer macilentus, 70:163
Odonata, 59:259; 60:65, 192, 228, 231; 62:308; 63:200, 384; 64:73, 153; 65:63, 66, 126, 127, 131; 66:183; 67:216; 68:190, 232; 69:207, 246; 70:317; 71:109; 73:233; 76:109, 112; 80:79; 81:245, 246; 82:21, 205, 209, 210, 216, 217

Odors, classification of, 64:403
Oecetis eddlestoni, 76:310
inconspicua, 69:250; 70:243
Oedogonium, 59:174, 184, 186; 60:255; 61:210; 63:392; 64:465; 73:386, 388; 74:252, 340; 82:22
Officers, list of, 59:3; 60:3; 61:3; 62:3 63:3; 64:3; 65:3; 66:3; 67:3; 68:3; 69:3; 70:3; 71:3; 72:3; 73:3; 74:3, 75:3; 76:3; 77:3, 78:3; 79:3; 80:iii; 82:3
Ohio, bass cestode life history, 61:201
breeding ponds in hatcheries, 61:108
catch of cisco, 60:204
cost of hatcheries, 61:107
crayfish in ponds, 65:189
cyclochaetiasis in hatcheries, 61:107
daphnia culture, 61:109; 62:156
description of hatchery ponds, 61:112
distribution plan for fish, 61:110
duties of hatchery superintendent, 61:111
effect of drought on fish, 64:58
fish populations in streams, 82:156
fish food production in impoundments, 63:269
fishery research in, 61:199
food of Buckeye lake fishes, 65:57
Ichthyophthiriasis in hatchery, 61:107; 62:159
legislation, 59:27; 64:98; 70:29; 71:27
management of hatchery ponds, 61:106
parasites in bait minnows, 59:198
parasites of fishes, 61:201; 63:220; 66:357
plankton in river, 61:203
in reservoir, 66:80
pollution studies, 61:202; 63:69
ponds, bass spawning in, 62:161
crayfish in, 62:160
predaceous insects in, 62:162
propogation of marbled catfish, 62:165
white spot infection, 62:159
pondfish culture, 62:156
potamogeton in ponds, 62:159
production of bottom fauna, 61:204, 66:81
progogation of catfish, 61:106
largemouth bass, 61:106
smallmouth bass, 61:106
reservoir stocking, 66:71
studies, 66:76
stocking policy, 62:258
stocking rates for pond, 61:108
studies on impounded waters, 63:265
summary of fishery research, 63:261
tagged fish, 61:207; 63:326; 66:316
tapeworms in bass ponds, 66:364
treatment for cyclochaeta in hatchery, 61:114
use of sodium arsenate in weed control, 61:148
Oil, crude, effect on fish, 65:324
drainage, as pollutant, 63:72
effect on oysters, 65:293
fuel, effect on trout and salmon, 77:163, 171, 175
in fish meal, 61:65
pollution act, 60:284
pollutant, 60:284
Oklahoma, fish culture of channel catfish, 61:171
effect of drought on fish, 64:59
hatchery methods, 59:215
legislation, 59:27; 64:98; 65:39
municipal pond culture, 65:179
pond reclamation, 82:166
Olfactory assay, pollutants, 79:64
Oligochaeta, 59:175; 60:64, 105, 191, 319; 62:308; 63:199; 65:127; 66:140, 183, 254, 374; 68:232; 70:352; 71:170; 72:56; 73:198, 200, 201; 81:115, 212, 214, 252, 253; 82:204-10
Ommastrephes illecebrosus, 64:157
Oncorhynchus, 62:253; 64:323; 73:321; 80:184
gorbuscha, 62:92; 69:237; 80:45
keta, 62:92; 73:189; 78:43; 82:139
kisutch, 62:91; 69:132, 135, 180, 220, 241, 280; 73:190; 77:162; 78:43; 80:184; 82:139, 327
nerka, 60:262; 62:92; 66:352; 69:132, 198, 241, 280; 70:339; 73:32, 190; 75:97; 77:162; 78:43
nerka kennerlyi, 60:247; 64:319; 66:396; 70:234
tschawytcha, 59:269; 62:90; 64:156; 65:165; 69:198, 220, 226, 241, 280; 70:57; 73:190; 74:293; 77:132, 162; 78:43; 80:185; 82:148, 327
Ontario, catch of cisco, 60:204
chemical analysis of water, 60:54, 146
distribution of *Gammarus*, 60:89
egg collecting, 60:45
fisheries research laboratory, 60:178
food of brook trout, 60:64
growth of kiyi, 74:107
number of hatcheries, 60:35
gravel in hatchery raceway, effect of, 66:283
hatchery policy, 60:35
history of fish culture, 60:45
plan for rearing unit, 60:37
pollution legislation, 60:306
pollution of natural waters, 60:306
raising black bass, 60:46
brook trout, 60:35, 45
lake trout, 60:35, 45
herring, 60:36
muskellunge, 60:47
pickerel, 60:35
rainbow trout, 60:35
salmon, 60:45
smallmouth bass, 60:36
whitefish, 60:35, 45
yellow pickerel, 60:45
research in, 63:29, 261
sea lamprey investigations, 76:148
sewage disposal in, 60:308
spawning habits, smallmouth bass, 60:53
species propogated in hatcheries, 60:35
status of fish culture, 60:33
survey of trout waters, 59:256
surveys, 60:34
trout diets, 60:140, 146
water area of, 60:33
Winnipeg River, pollution, 60:311
Oocystis, 59:97; 66:119; 82:235
Oopu, food of, 74:271
Oopu akupa, food of, 74:270
O'opuhue, food of, 74:272
Opercle clip tag, 73:324, 334
Opercular bone-body length relationship, carp, 81:145
Ophridium versatile, 64:428
Ophiocephalus, 78:94
Ophiodon elongatus, 69:107
Ophryoxus, 59:176
Opisthonema ligertate, 67:258
Opisthopterus lutipines, 67:258
Opisthorchis pseudofelineus, 64:394
Optimum size, gill nets, determination of, 79:167
Orchelimum vulgare, 75:120
Oregon, lake management studies, 77:105
legislation, 59:28; 63:35; 64:99; 65:39
introduction of exotic species, 69:240
pollution abatement, 62:359
spawning of rainbow, 64:167

spawn taking, 66:394
value of salmon, 64:88
Organoleptic tests, wild vs. reared brook trout, 75:181
Organic fertilizer, 72:97, 225
Organic nitrogen, 74:346
Ori flies, food of brook trout, 63:194
Orthocladius, 60:81; 65:64, 66
Orthocladiinae, 73:202
Orthodichlorbenzene, weed control, 76:179
Orthopristis chrysopteris, 79:141
Orthoptera, 60:66; 63:194; 65:131; 69:246; 71:109; 76:109, 112; 81:245-6
Orthosira oricalcea, 64:447
Oscillatoraceae, 74:265
Oscillatoria, 60:254; 68:128; 73:377, 386; 74:254-5; 82:22, 24, 230
agardhii, 62:284
prolifica, 64:447
tenuis, 66:119
Osmeridae, 80:57
Osmerus, 80:60
eperlanus, 62:314
mordax, 62:332; 64:432; 66:139, 160, 345; 67:167; 70:233; 72:257; 73:87; 74:234, 310; 76:122, 160, 166; 78:114, 176; 80:64
Osphranticum, 80:73, 76
Osphronemus goramy, 78:94
Osprey, trout predator, 62:247
Ossification, spinal column, 73:41
Ostion, in Mexican waters, 74:79
Ostracoda, 59:100, 175, 176; 60:65, 105, 187, 224, 254, 255, 258; 61:211; 62:187; 63:199; 64:152, 206; 65:61, 63, 66, 67; 66:140, 253, 374; 67:221; 69:180, 207; 72:141; 73:233; 82:23, 25, 27, 28, 216
Ostrea, 78:94
chilensis, 74:79
gigas, 69:263
lurida, 69:263
virginica, 69:263
Otobothrium crenacolle, 64:390
Otolith, age determination, 70:77; 80:163
Ovalipes sapidus, 70:74
Overcrowding, re smelt mortality, 64:319
Overfishing, Lake of the Woods, 77:18
relation to depletion of Great Lakes Fishery, 75:319
Overpopulation, combatting, 76:19
Oxblood, culture for crustaceans, 63:103
Oxyethira, 70:243; 76:310
Oxygen, amount consumed under crowding, 63:26
in artificially circulated lake, 82:231
consumption by carp, 62:123
by fish, 63:216; 74:214
by largemouth bass, 63:208
by trout, 62:123
deficiency, 71:360
depletion in fertilized pond, 62:318; 63:116; 64:181; 79:109
effect of high concentration on fish, 61:218; 62:267
effect of pollution on, 60:300; 62:280; 63:70
effect on respiratory movement, 59:239
effect of sewage effluent, 64:445
effect of sunlight, 62:280
in fertilized waters, 64:408
in Lake Erie, 63:273
in Minnesota ponds, 66:107
in New York lakes and ponds, 64:192
in Norris Reservoir, 68:64
in Ohio Reservoirs, 66:79
in Ontario water, 60:41, 42, 43
in streams, 65:243
low pressure, effect on fish, 67:271
range of, in Ontario waters, 60:54
relation to depth distribution of fish, 75:65
relation of plants to, 64:370
relation to winter mortality, 76:23
requirement, bluegill, 81:162, 165, 167
trout, 68:344
supersaturation causing fish mortality, 71:112
supply in hatchery water, 59:195
tension, in respiration, 63:29
effect on oxygen consumption, 63:210
test solution for toxicity, 75:228
toleration threshold, 76:32
use in transporting trout, 70:149
Oxytricha, 69:180
pellionella, 64:447
Oyster culture and physiology, education for, 70:129
farming, 71:330
importation of, 71:33
in Prince Edward Island, 60:175
methods of collecting, 69:263
Mexican, 74:79
oil pollution on, 65:293
pearl, 74:80
production of, 61:24
Chesapeake Bay, 62:44
Maryland, 62:50
statistics, 71:71
potential yield, 71:71
quick freezing of, 62:80
research, Maryland, 62:50
scientific methods of farming, 62:72
size of egg, 62:73
use of copper in development, 62:73
water farming, 63:154

P

Pachydiplax longipennis, 79:149
Pachyurus francisci, 65:268
Pacific Ocean, fishery statistics, 71:68
Pacific salmon fisheries commission, established, 59:32
progress of, 60:22; 63:21
Paddlefish, collected by shocker, 77:60
Palaemonetes, 70:359; 82:21, 215
paludosa, 79:149; 82:13, 15, 19, 29, 30
Palatability, wild vs. reared brook trout, 75:181
Palinurus interruptus, 67:258
ornatus, 67:258
Pallmeloid colonies, in Minnesota ponds, 66:120
Palmacorixa, 63:389
buenoi, 65:66
Paloma, in Mexican waters, 74:77
Palpomyia, 65:66
Paludestrina, 76:308
Pampano, in Mexican waters, 74:77
Pancreatic cells of fishes, 72:263
Pandorina, 69:97; 66:119, 124
Pangelus controdintus, 67:283
Panopeus pacifica, 74:267
Pantosteus delphinus, 80:87
platyrhynchus, 80:89
Pantothenic acid requirement, trout, 74:81
vitamin in fish, 77:152
Panulirus argus, 75:267
inflatus, 74:79
interruptus, 74:79
Paoo kaulaoa, food of, 74:271
Papagallo, in Mexican waters, 74:77
Paplo, Hawaiian, food of, 74:272
Paradise fish, parasites on, 64:179
Paralabrax, 74:75
clathratus, 69:117

Paraleptophlebia, 69:252-3
mollis, 72:36
praepedita, 72:36
Paralithodes camtchatica, 65:342
Paralichthys californicus, 74:76
dentatus, 81:325
lethostigmus, 79:139, 141
oblongus, 81:325
Paramoecium, 61:230; 63:211; 79:107, 226
Parametorchis complexus, 64:394
Paramphostomum stunkardi, 68:265
Parapenaeopsis, 73:311
acclivirostris, 73:313
atlantica, 73:312
balli, 73:312
cornutus, 73:313
gracillima, 73:312
hardwickii, 73:313
hungerfordi, 73:313
maxillipedo, 73:313
nana, 73:313
sculptilis, 73:313
stylifera, 73:313
tenellus, 73:313
uncta, 73:312
venusta, 73:313
Parapenaeus, 73:308
americanus, 73:308
fissurus, 73:309
investigatoris, 73:309
longipes, 73:308
longirostris, 73:308
Paraphrys vetulus, 69:107; 79:207, 210
Paraponyx, 73:202
Parasites, bacterial gill disease, 63:143
bass, in Ohio stream, 63:220
black spotted trout, 63:172
brook trout, 60:85; 65:332, 334; 66:343; 67:91, 228
channel catfish, 59:117; 61:172
control methods, 71:122
description of, 66:345
Neacus, 69:276
of fishes, 64:390; 70:161; 71:286
flatworms in minnows, 69:283
food of brown bullhead, 60:255
largemouth bass, 60:256
log perch, 60:257
rock bass, 60:256
sucker, 60:254
yellow perch, 60:258
glochidia on gills, 59:217
in bait minnows, 59:198
in bass, Quebec, 63:29
in Florida centrarchids, 68:263
in goldfish and carp, 64:176
in largemouth bass, 63:114; 72:197; 75:105
in pickerel, 69:268
in northern pike, 69:268
in smallmouth bass, 68:335
infusoria in bait minnows, 59:199
intestinal flukes in bait minnows, 59:200
low infestation in New York reservoir, 61:141
of mosquito fish, 61:208
myxosporidian in largemouth bass, 68:173
new protozoan in bass, 69:169
protozoan, 72:234
Ohio fish, 61:201; 66:357
sea lamprey, 81:94
sockeye salmon, 61:129
treatment of, with salt, 69:200
trout gill worm, 61:189
Parathunnus mebacki, 74:72
Pargo, in Mexican waters, 74:75
Parnidae, 66:197
Parnid beetles, food of smallmouth bass, 70:321
Pathology, fish, education for, 70:129
yellow walleye, 71:112
Peanut meal, in trout diet, 59:126; 63:167; 72:97
Pedalia mira, 66:124
Pediastrum, 60:254, 255; 65:118; 73:392; 82:22
boryanum, 66:119
Pedicia, 75:121
Peelers, bait for weakfish, in Maryland, 66:404
Pelagia noctiluca, 65:280
Pelagic Sealing Treaty, 70:30; 71:36
Pelagic sealing, 81:311
Pelagopenaeus, 73:303
Pelecanus erythrorhynchos, 64:393
Pelycopoda, 59:259; 66:183; 67:217
Pelican, white, infected with tapeworm, 64:393
Peltodytes, 75:120
Penaeidae, 62:108
key to, 73:284-319
Penaenopsis, 73:308-9
beebei, 73:310
goodei, 73:310
kishinouyei, 73:310
lamellatus, 73:309
megalops, 73:309
mineri, 73:310
pubescens, 73:309
rectacutus, 73:309
serratus, 73:309
smithi, 73:309
Penaeus, 73:302
aztecus, 73:306; 79:139; 82:152
brasiliensis, 62:108, 112; 73:305
brevirostris, 73:306
caeruleus, 73:305
californiensis, 73:307; 74:78
canaliculatus, 73:307
carinatus, 73:305
duorarum, 73:306; 82:152
esculentus, 73:305
indicus, 73:305
japonicus, 73:307
latisulcatus, 73:307
maccullachi, 73:308
marginatus, 73:307
merguiensis, 73:305
occidentalis, 73:304
penicillatus, 73:305
schmitti, 73:304
semisulcatus, 73:305
setiferus, 62:108, 112; 73:276, 303; 82:151
stylirostris, 73:304; 74:78
trisulcatus, 73:305
vannamei, 73:304; 74:78
Penopsis monoceros, 78:94
Pennsylvania, catch of cisco, 60:204
loss of trout in drought, 60:251
legislation, 59:28; 62:27; 64:38, 99; 65:39; 71:27
summary of fishery research, 63:262
Pentagenia, 75:120, 128
Pentatomidae, 60:66; 66:197; 69:251
Pentaneura, 67:220
Peptone solutions, in culture of columnaris, 73:35
Peranema trichophorum, 64:447
Percebes, in Mexican waters, 74:78
Percidae, 60:217; 80:56
Perca flavescens, 59:110, 150; 60:216, 229, 258; 62:333; 63:384; 64:319, 374, 392; 65:67, 109, 210, 298; 67:122, 167, 181, 242, 272; 68:285, 356; 69:65, 143, 241; 70:82, 102, 144, 167, 195, 352, 387, 394, 422, 436; 71:272; 72:77, 137 187; 73:29, 76, 87, 105, 184, 231; 74:234; 75:36, 116, 140, 179,

205, 219, 221, 224, 237, 241, 244, 282, 306, 330, 334; 76:27, 32, 64, 70, 110, 165, 304, 309, 312, 314; 77:13, 35, 180; 78:67, 87, 146, 163; 79:21, 30, 127, 169, 188, 196; 80:12, 50, 64, 68, 100, 198; 81:10, 111, 115, 124, 151, 163, 181; 82:34, 42, 53, 106
Perca fluviatilis, 62:314
Perch, blue, in India, 78:94
Perch, log, catch in New York lake, 67:134
food of, 60:257; 63:385; 65:60
food of northern pike, 60:255
Perch, ocean, name change, 81:326
Perch, Pacific Ocean, catch, 82:321
Perch, Sacramento, factor in cutthroat decline, 69:220
in Nevada, 73:186
Perch, trout, food of, 60:255
food of lake trout, 67:167
lawyer, 67:170
in Manitoba, 75:330
parasites of, 66:358
Perch, white, effect of copper sulfate on, 65:109; 69:143
effect of rotenone on, 69:149
food of, 72:136
food of channel catfish, 73:367; 75:118
killed with rotenone, 70:352
in Nova Scotia lakes, 67:181
in small pond, 79:123
hatchery pond, Maryland, 62:48
in New Hampshire, 71:333
population of, 65:297
Perch, yellow, absorption of oxygen, 67:272
age by opercle, 81:140
age and growth, 70:102; 79:40
anabiasis, 62:340
catch, 60:229; 63:301; 65:211; 66:92; 325; 67:134; 68:356; 70:195, 385; 73:29, 105; 76:13, 35; 78:67; 79:130, 179; 196; 80:15, 26, 50; 81:151
coefficient of condition, 75:244
conversion between standard and total length, 75:238
depletion in Great Lakes, 69:33
depth distribution, 62:333; 81:163
effect of copper sulfate on, 65:109; 69:143
effect of rough fish removal, 82:106
effect of turbidity on, 75:282
food of, 60:229, 258; 63:384; 65:60; 73:231
food of channel catfish, 75:116
garpike, 59:159
kingfisher, 76:105
lake trout, 67:167; 76:312
lawyer, 67:170; 80:56
northern pike, 60:255; 80:67
rainbow trout, 76:309
trout, 59:150
walleye, 60:258
gill net problems, 78:173; 79:169
growth rate, 60:229; 75:221, 306; 76:64, 70; 77:180, 197; 78:83, 87, 79:30, 188
host of bass cestode, 61:201
host of tapeworm, 64:392
in British Columbia, 64:319
in Canadian marsh, 70:422
in fertilized lake, 78:146
in Lake Ontario, 74:234
in Lake Winnepeg, 60:216
in Manitoba, 75:330; 79:21
in Minnesota lake, 81:182
in Montana, 80:100
in Nevada, 73:184
in Nova Scotian lake, 67:181
in Ontario lakes, 81:113, 115, 126, 128
in small lakes, 67:122
in trap nets, 62:103
in trout stream, 65:319
in Virginia, 80:198, 207
in Wisconsin lake, 82:34
introduced into Oregon, 69:241
killed by lack of oxygen, 64:374; 76:27
killed by rotenone, 70:82, 144, 352; 75:140, 205
length-weight relationship, 70:272; 75:237, 241
Maryland hatchery ponds, 62:48
migration, 70:394; 72:137; 81:150
mortality, 68:247; 75:179
not infested with *C. columnaris*, 77:103
overpopulation, 70:339
oxygen threshold, 76:32
parasite in eye, 64:395
parasites of, 70:168
population, 65:297; 68:285; 72:187; 78:163; 81:4; 82:53
potential yields, 71:69
predation on cisco eggs, 67:242
on walleye fry, 73:259
propogation curtailed, 79:247
propogation, Indiana, 61:116
range of pH tolerance, 61:216
sex ratio, 76:65, 70
size and age composition, 75:219, 222
size limits, Lake Michigan, 64:112
spawning of, 60:230
spawning season, 64:112
statistics, Saginaw Bay, 70:104
stocked, 60:261; 72:77; 79:127
stunted, 75:36
tagged, 63:326; 69:65; 82:43
trapped in weir, 73:76; 76:165
variations in food and growth, 70:436
white blindness in, 80:146
year classes, 75:224, 308
Percina, 80:60
caprodes, 59:200; 60:257; 63:385; 65:67; 67:167; 71:203; 76:114, 304; 80:37, 64; 82:160, 202, 214, 256
Percopsidae, 60:217; 80:57
Percopsis omisco-maycus, 60:66, 255; 63:382; 66:357; 67:167; 75:330; 80:60, 64; 82:160
Peridiniaceae, 59:176
Peridinium, 61:210; 63:396; 65:107; 69:154; 72:276
Periphyton, 82:13, 16, 22, 24, 236
Perithemis seminole, 79:149
Perla, 60:65; 66:375; 70:317
hastata, 75:120
Perlesta, 75:120
Perlodidae, 80:102, 104, 107
Persicaria, 79:146
Personnel, state fishery programs, 76:13
Peru, fishery mission, 71:35
Pescado blanco del mar, in Mexican waters, 74:76
Petersen, dredge, 73:197
Peterson population estimate, 82:48, 50, 51, 58, 59, 62
Petersen tag, 73:324, 335
Petromyzonidae, 59:150; 60:217; 66:172, 183
Petromyzon marinus, 67:241; 76:123, 148; 79:71; 80:45, 280; 81:94, 275; 82:123, 178
Pez vela, in Mexican waters, 74:77
Pez gallo, in Mexican waters, 74:77
Pez espada, in Mexican waters, 74:77
Pfrille neogaea, 70:144, 164
pH, effect on oxygen consumption, 63:209
effect of pollution on 60:300
influence of sudden change on fish, 61:216
Lake Erie, 63:273
in Minnesota ponds, 66:108

in New York lakes and ponds, 64:194
of Ontario trout waters, 59:257; 60:41
range of, in Ontario waters, 60:54
range of tolerance, bluegill, 61:216
brook trout, 61:216
bullhead, 61:216
goldfish, 61:217
largemouth bass, 61:217
green sunfish, 61:217
orangespotted sunfish, 61:217
pickerel, 61:216
smallmouth bass, 61:217
yellow perch, 61:216
Phacus brevicaudus, 64:447
pleuronectes, 66:119
Phenacobius mirabilis, 75:127, 133; 76:208; 82:160
Phenols, olfactory assay by fish for, 79:64
Philippine fisheries, 77:307; 78:222; 79:261
Philippine fishery program, Institute of Fisheries, 79:213; 80:332
Philodistomum superbum, 69:271
Philometra, 70:170
Philonema agubernaculum, 66:352; 71:287
onchorynchi, 66:352
Philopotamus, 60:81; 70:321
distinctus, 63:186; 70:243
Phormidium, 66:119
Phoridae, 67:216, 219
Phosphate, lake fertilizer, 71:369; 73:264, 270
in Ontario waters, 60:41
limiting factor in productivity, 82:281
Phosphatide, in various foods, 66:294
factor H, 66:294
Phosphoric acid, in carp, 64:452
Phosphorus, and alkalinity in lakes, 82:78
distribution, in artificially circulated lakes, 82:233
in crab meat, 65:343
in fish meal, 64:295
in Holston River, 73:204
in Minnesota ponds, 66:112
in natural ponds, 73:257
in rearing ponds, 73:254, 377
in trout body, 61:74
pond fertilizer, 76:346
presence in water, 59:55
relation to productivity, 76:327
residual, 82:81
Photodecomposition, cause of high toxicity, 78:192
Photography, fish scales, 70:98
Phoxinus laevis, 70:70
Phryganeidae, 69:254
Phryganea, 76:310, 312
Phycomyces blakesleanus, 76:37
Phyllodistomum staffordi, 70:166
Phyllaphaga, 75:121; 76:312
Phyllopoda, 82:216
Phylotria, 64:182
Phryganea cinerea, 66:344
Phryganeidae, 60:65, 224, 228, 230, 235
Physa, 59:258, 259; 60:64, 191; 68:271; 69:153, 250, 252; 72:278-9, 283; 76:308; 80:61
gurina, 64:447
virgata, 63:203
Physeter catodon, 67:257
Physidae, 82:15
Physico-chemical conditions, Maligne lake, 70:223
Potter's lake, 70:348
impounded waters, 71:84
Physiological change, re smelt mortality, 74:319
Physiological effect, high concentration of oxygen, 62:267
of electrical shocking, 77:62
Physiology, of respiration, 63:29
Phytoplankton, effect of copper sulfate on, 65:106
effect of fertilizer on, 63:103
in fertilized ponds, 71:96
in Lake Erie, 63:275
Piaropus crassipes, 79:146, 150
Pickerel, chain, catch, 71:203; 72:208; 73:39
effect of D.D.T. on, 75:50; 76:316, 320
in Connecticut, 71:339
in Florida, 78:39
in New Hampshire, 71:333
in New Jersey, 71:356
in New York reservoir, 61:140
in Tennessee, 68:244
in trout stream, 65:319
killed by rotenone, 70:352
parasites of, 69:268
predator in Louisiana, 82:258
shed teeth, 65:262
Pickerel, grass or mud, breeding habits, 66:372
catch, 78:68
food habits, 66:372
in bass stream, 82:202
in Louisiana, 82:258
in Michigan trout lake, 76:301
in sewage plant pool, 64:446
killed by lack of oxygen, 64:374
killed by rotenone, 72:270
mortality, 76:27
oxygen threshold, 76:32
population study, 72:178
size and age composition, 75:222
tagged, 68:259
Pickerel, redfin, parasite of, 69:269
in Florida, 78:39
Pickerel weed, in Quebec, 64:465
effect of copper sulfate on, 69:145
Pickwick Reservoir, 72:246
Pigment formation, *B. salmonicida*, 82:135
Pike, in European ponds, 76:337
Pike, gar, population study, 72:187
Pike, northern, age, 62:327
angling for, 66:89
catch, 60:230; 65:213; 66:325; 68:356; 77:15, 18, 86; 78:163; 79:20; 81:181; 82:109, 112
coefficient of condition, 75:254
conversion between standard and total length, 75:238
depth distribution, 62:332
effect of overfishing, 62:329
food of, 60:231, 255; 66:372; 80:67
food of channel catfish, 75:116
food of kingfisher, 76:105
in gill net, 73:29; 75:330
growth calculations, 79:191
growth rate, 60:230; 62:327; 82:221
hatchery pond, 71:345
host of tapeworm, 64:392
in Algonquin park lake, 75:20
in Iowa Lakes, 80:50
in Lake Manitoba, 79:169
in Lake Waskesiu, Saskatchewan, 62:323
in Lake Winnepeg, 60:216
in Manitoba, 62:377
in Michigan lake, 70:195; 76:301; 78:146
in Minnesota, 68:163
in Wisconsin Lake, 82:35
length-weight equation, 75:241
relationship, 75:254
life history, 62:323; 74:149
mortality, 71:112; 75:175
in winter, 76:27
optimum gill net mesh size, 79:171
oxygen threshold, 76:32

name change, 81:325
parasites in, 64:396; 69:268; 71:286
population study, 72:187; 79:196; 81:4, 11
predation of, 59:111
predation on walleye, 73:259
predation of atlantic salmon, 78:131
propogated in Ontario, 60:35
increase in propogation, 79:247
production in Wisconsin lakes, 66:308
range of pH tolerance, 61:216
regulations on, 62:328
sex ratio. 71:155
shedding teeth, 65:261
size limit, 62:329
spawning of, 60:231; 62:325; 66:372; 75:326
spawning migration, 71:153
trapped in weir, 73:76; 76:165
zymogen granules in, 72:263
Pike, sacramento, migration, 70:61
Pike, sand, host of tapeworm, 64:392
Pikeperch, blue, growth in Lake Erie, 77:197
in cisco nets, 74:234
mortality of, Niagara River, 68:247
year classes, 75:308
Pilchard, catch, 80:352
in Mexican waters, 74:72
investigation, 69:31
production of, 61:24
taxonomy, 80:111, 115
Pilchard, pacific, change of name, 70:32
Pilodictis olivaris, 63:321; 64:446; 71:203; 73:39, 147; 75:116; 77:60; 80:31, 37, 198; 82:214, 245
Pimelodus clarius, 65:268; 66:75
Pimephales notatus, 65:61
perspicuus, 82:214, 247
promelas, 61:132, 135; 62:198, 290, 382; 64:94; 65:132; 66:317; 67:122; 69:273; 72:194; 75:92, 95, 127, 133, 330; 76:209, 250, 317, 320; 79:20; 80:156; 81:113, 115, 120; 82:160, 214
Pinctada mazatlantica, 74:80
Pine needles, in cutthroat trout stomach, 63:199
Pinnularia, 66:119; 74:274
Pintilla, in Mexican waters, 74:75
Pira, in Brazil, 65:268
Piranhas, in Brazil, 65:268
Pirate perch, in bass stream, 82:202
in Louisiana waters, 82:256
Piscicola punctata, 68:265, 267
Pisidium, 60:64, 191, 219; 66:140; 69:250; 71:255; 75:328; 76:308; 78:16
abidtum, 80:65
Pithophora, 59:184; 82:287
Pittman-Robertson Act, 70:29, 47; 71:28-9, 38
Placobdella, 59:175
Placopharynx, 63:71
carinatus, 82:245
Plagiocirrus primus, 69:271
Plaice, American, name change, 81:325
Plaice, European, tagging, 73:321
Planaria, 60:191; 63:211
Plankton, algae, numbers in fertilized pond, 59:97
animal, number in fertilized pond, 59:99
effect of copper sulfate on, 65:117
effect of fertilizer on, 62:318; 64:151; 69:257; 78:134
effect of pollution on, 60:300, 315
effect of rotenone on, 69:152
effect of temperature on, 61:204
facultative study, 60:187-198
food of cutthroat trout, 63:200
lake trout, 81:111
sucker, 59:260; 60:231
in fish ponds, 59:183
Hocking River, Ohio, 61:203
in artificially circulated lake, 82:235
in Maligne lake, 70:224
in Minnesota ponds, 66:114
in Quebec lakes, 64:461
measure of, as turbidity, 79:107
production in fertilized pond, 68:127
production in New Jersey hatchery, 62:168
in Ohio Reservoir, 66:80
in ponds, 68:309; 71:168
pumps, 62:292
quantitative analysis, 60:234
quantity in Lake Winnepeg, 60:235
relation to productivity, 76:330
relation to turbidity, 75:304
role in lake associations, 59:174
seasonal variations, 71:169
traps, 62:293
type and efficiency of nets, 62:292
Planaxis labiosus, 74:255
Planorbidae, 82:15
Planorbis, 60:191; 72:278, 283; 75:127; 76:308; 82:205, 209
Planting, atlantic salmon, 78:128
brown trout, 75:147
carp in Minnesota, 59:225
eyed eggs of sockeye salmon, 61:124
fingerlings in Minnesota, 59:227
fish in Minnesota, 61:242
kamloops fry, 62:149
lake trout, 75:323
Lake Superior whitefish, 59:225
muskellunge fingerlings, 59:203
muskellunge fry, 59:203
pike fry, 59:232
rainbow trout, 75:323
relation to catch, whitefish, 71:118
salmon, in Minnesota, 59:225
spring vs. fall, 71:259
trout, 74:35; 76:14; 77:28, 107, 110; 79:77
trout fingerlings in circular pools, 62:133
use of trucks, Michigan, 62:181
Plant lice, food of brook trout, 60:66; 65:127
cutthroat trout, 63:200
rainbow trout, 65:126
Plants, associations in lakes, 59:174
chemical analysis of, 65:186
control in ponds with sodium arsenite, 61:143
control by fertilization, 71:94
effect of fertilizers on, 73:377
effect of sewage effluent on, 64:443
food of alewife, 64:121
brook trout, 60:64; 65:127
horned dace, 64:73
rainbow trout, 65:126
trout, 65:131, 387
whitefish, 68:162
in ponds, 59:258
in Quebec lakes, 64:464
relation to oxygen supply, 64:370
relation to productivity, 76:330
role in food production, 60:87
Platygobio gracilis, 80:100
Platyhelmia, 60:191
Platichthys stellatus, 69:180
Platyonichus ocellatus, 65:342
Platyphylax, 81:252
Plea, 60:192
striala, 68:191
Plecoptera, 60:65, 81, 191; 63:194, 199; 65:127, 153; 66:183; 68:232; 69:195; 70:241, 320, 328; 71:107, 109; 72:57; 73:200; 80:101-6; 81:214, 245, 249-53
Plectrocnemia cinerea, 70:243

Pleodorina, 59:97; 66:124
Plesiopenaeus, 73:300
armatus, 73:301
coruscans, 73:301
edwardsianus, 73:301
Plethodon cinereus, 60:67
Pleurobema coccineum, 64:446
Pleuroceratidae, 80:65
Pleuromonas jaculans, 64:447
Pleuronectes flesus, 62:314
Pleuronema, 69:180
Pleurosigma, 74:254, 272
Pleurotaenium, 61:211; 65:107
Pleuroxus, 80:73, 76; 82:16, 22
aduncus, 78:101
denticulatus, 65:63, 65, 67
procurvatus, 63:379
Plucks, as hatchery food, 65:380
Plumatella fungosa, 75:115, 122, 127
Pneumatophorus diego, 69:117; 74:72; 80:111
grex, 80:111
Poa pratensis, 75:127
Podophthalmus vigil, 74:267
Poecilichthys caeruleus, 59:110; 82:160, 193
exilis, 64:374; 67:122; 70:82, 144, 423; 72:178, 270; 75:330; 80:69
flabellaris, 75:133; 82:160, 202
spectabilis, 82:160
Poecillidae, 61:132; 80:90; 82:19
Pogonias cromis, 79:139
Poisoning, Deep Lake, Michigan, 75:200
effects of D.D.T., 75:48
fish, 68:269
Ford Lake, Michigan, 75:36
Michigan Lakes, 75:139
Oregon lakes, 77:106
for population study, 72:177
symptoms, brown trout, 75:59
undesirable fish, 71:104
Policy, American Fish, 63:73; 64:25; 65:27; 66:29; 68:30; 70:34; 71:28, 297, 315
Pollachius virens, 64:157
Pollack, in hatchery diet, 64:157
nutritive value, 64:436
potential yields, 71:65
tagging, 73:321
Pollutants, list of, 71:93
Pollution, abatement, 62:29; 77:270; 78:51; 79:300
arsenic, in Connecticut, 61:160
Barkley Bill, 70:29, 37, 48
bills against, 67:24
California, control, 62:359; 69:90
cause of depletion of fisheries, 60:279
character of wastes, 60:300
Chironomus plumosus, as index, 59:158
clean streams campaign, 62:355
Committee, report, 65:29; 66:29; 67:23; 68:37; 69:49; 71:42; 79:278; 81:338
control, 71:317
copper, in Connecticut, 61:160
decrease in fish life, 60:311
decline of atlantic salmon, 70:123
deficiencies in laws, 70:39
destroying sockeye salmon in British Columbia, 60:267
domestic sewage, 63:71
effect on *Ameiurus*, 63:71
aquatic organisms, 63:70
bass, 63:71
bottom fauna, 60:300, 317; 61:204
carp, 63:71
carpsucker, 63:71
channel catfish, 63:71
coal washings on trout, 67:232
dissolved oxygen, 60:300; 62:280; 63:70
eggs, 63:282
finescaled sucker, 63:71
fish life, 60:292, 300, 320; 63:68
fishery, Lake Erie, 63:280
gizzard shad, 63:71
Moxostoma, 63:71
Placopharynx, 63:71
pH, 60:300
plankton, 60:300, 315; 61:204
salmon runs, 74:189
sewage, 82:156
Schilbeodes, 63:71
shad, 61:160
sludge in stream, 59:255
stream, 77:271
sunfish, 63:71
vegetation, 60:300
walleye, 73:105
factor in decline of Pyramid Lake fishery, 69:220
Great Lakes, 59:80; 65:75
habitat requirements of fish, 65:244
Idaho, abatement, 62:359
Illinois, abatement, 62:359
in British Isles, 66:387
Holston River, 73:202
in impounded waters, 71:92
Michigan streams, 66:389
in Mississippi River, 60:286; 62:356
Niagara River, N. Y., 68:246
Ohio River, 63:38; 80:350
Ontario, 60:297-310
Pepin lake, Minnesota, 59:158
North Carolina, Currituck sound, 62:31
streams in Illinois, 59:252
in Texas, 64:81
T.V.A. reservoir, 71:351
western Lake Erie, 63:271
Indiana, abatement, 62:359
legislation on, 65:25; 71:42, 330
Lonergan report, 65:29
menace of, 63:76; 64:28
menace to nation, 62:370
menace to upper Mississippi River fishery, 64:329
measurement in streams, 65:240
Mundt bill, 70:37
National problems, 62:355
necessity for control, 70:19
North Carolina, abatement, 62:359
nicotine, in Connecticut, 61:160
oil, 63:72; 64:81; 65:324
oil, on oysters, 65:293
oil, federal law prohibiting, 62:30
olfactory assay, 79:64
Oregon, abatement, 62:359
paper-mill, 71:317
purification, 77:277
re smelt mortality, 74:317
resolution concerning, 71:53
salt from oil fields, 64:81
sewage disposal, 62:357
South Dakota, abatement, 62:359
studies in Ohio, 61:202
in Tennessee, 68:242
test animal, 78:97
Virginia, abatement, 62:359
Washington, D. C., 62:30
Polyarthra, 59:100; 75:328; 78:141; 82:22
platyptera, 65:108
trigla, 66:124
Polycelis nigra, 78:103
Polychaetes, 74:267
Polycentropidae, 60:65; 69:250; 73:202
Polycentropus, 75:53
confusus, 70:243, 245, 246
Polydora ciliata, 74:274
Polygonium, 59:177
Polygonum perspicaria, 75:127

Polyphemus, 70:350; 78:94; 80:73, 76
pediculus, 64:462; 70:423, 425
Polyodon spathula, 71:203; 77:60
Polysiphonia, 74:254
Polyzoan, food of grayling, 68:193
Pomadasys, 74:77
Pomatomus saltatrix, 66:403; 79:139, 142
Pomolobus, 67:80; 73:367
aestivalis, 64:157; 78:40
chrysochloris, 71:203, 206; 73:39
mediocris, 64:157
pseudoharengus, 64:118, 157; 67:91, 156, 241; 70:299; 73:147, 394; 74:234
Pomoxis, 70:469; 78:163
annularis, 59:110; 60:256, 270; 63:323, 386; 64:374; 65:64; 66:357; 68:258; 69:241, 257; 70:183, 335, 360; 71:103, 178, 203; 73:39, 147; 75:88; 77:102, 142; 78:66; 79:122, 127; 80:3, 12, 15, 31, 48, 50, 182, 198, 219; 82:106, 160, 214, 215, 245
nigromaculatus, 59:110; 61:83; 63:323, 387; 65:212; 67:241; 68:266; 69:241, 257; 70:195, 335, 384, 387; 71:112, 203; 72:187; 73:39, 76, 157, 187; 75:116, 175, 179; 77:39; 78:39, 165; 79:122, 145, 157, 191; 80:3, 12, 15, 31, 50, 91, 198, 210; 81:10; 82:35, 53, 106, 218, 245, 255, 256
Pomphorhynchus bulbocollus, 69:271; 70:163, 165-6; 71:287
Pondexal indexes, yellow bass, 82:91, 101-3
Ponds, algae in, 59:182
bass, daphnia in, 60:39
golden shiners in, 60:30
in Indiana, 71:365
behavior of bass in, 64:146
bottom fauna, 75:165
breeding, Ohio hatcheries, 61:108
bullfrog, 61:266
calculating weight of fish in, 66:422
cannibalism in, 66:242
chemical analysis of, 64:189; 66:104
chemical disinfectants, 63:158
circular, for salmonidae, 60:121
management of, 63:139
control of spatterdock, 70:335
construction, 81:219
crayfish in, 62:160; 63:397; 65:189
creek chub in, 75:336
culture, objectives in, 65:176
daphnia in, 61:109; 62:156; 64:205
description of, sockeye salmon, British Columbia, 61:129
elimination of backswimmer in, 64:136
beetle larvae in, 64:136
dragonfly nymphs, 64:134
European, for raising fish, 62:372
fertilization of, 60:39, 49; 61:117, 133; 62:317; 64:128, 129, 151; 65:132, 184; 69:257; 70:335; 72:64, 97; 73:253, 377, 393
fertilized, growth of black bass, 63:106
productivity, 74:342
fertilizers, 74:342
fish culture problems, 63:391
fish production in, 68:309; 69:101; 71:358
golden shiner, as forage, 64:130
hatchery, construction of, 61:40
description of, Ohio, 61:112
disease in, 62:159; 64:138
efficient operation, Ohio, 61:106
stocking rates, Ohio, 61:108
headwaters, for increasing production, 60:88
increased food by fertilizer, 68:126
management, 71:102, 332; 77:292;-81:219
measuring production, 72:220
minnow, amount of fertilizer per acre, 61:133
propogation, 65:132
municipal, 65:179
nitrogen content variations, 74:338
outlet, Iowa nursery, 64:170
plankton in, 66:114, 68:309
natural enclosures for smallmouth bass, 67:96
planting brook trout, 70:412
predaceous insects in, 62:162
prepared for channel catfish, Oklahoma, 61:171
program, 71:340
propogation of brown bullhead, 62:165
silvery minnow, 71:215
rearing, cooperative in Indiana, 61:117
food used in, Michigan, 59:237
in Michigan, 59:235
plan of, in Ontario, 60:37
residual nitrogen and phosphorus, 73:254
salmonids in British Columbia, 65:172
in Tennessee, 68:244
results of different bass-bluegill ratios, 77:141
retention of sockeye salmon, 61:124
spawning of bass in, 62:161
stocking program for Texas farm, 80:210
stocking with hybrids, 75:84; 79:112
survival in, 72:221
tapeworms in bass, 66:364
terrace-water, in Alabama, 69:101
trout, natural, 59:258
vegetation control, 61:143
warm-water, need for study, 59:22
Pondfish culture, in Ohio, 62:156
Pondfishes, Hawaiian, 64:250, 262
Pondfish, role of fertilizer in, 63:103
Pondweed, effect of copper sulfate on, 69:145
in Cayuga Lake, N. Y., 69:205
in Michigan lake, 75:203
in Quebec lakes, 62:198; 64:465
Pontederia, 67:180; 69:145
cordata, 64:465; 75:203
lanceolata, 79:146
Pontoporeia, 66:377; 74:155; 78:180; 80:57
hoyi, 60:219, 222, 319; 67:167; 74:236; 77:86
Population, bass, 80:238
brook trout in Michigan stream, 66:203
census in trout stream, 68:285
changes, 77:16
control with copper sulfate, 64:276; 65:101
decline due to lowering water level, 69:220
Deep Lake, Michigan, 75:200
density, 71:236
brown trout, 73:209
changes in growth, 78:82
estimation of, 78:26
fluctuations, tullibee, 73:126
walleye, 73:90
fish in Minnesota lakes, 78:163
pressure, 73:28
reduction of, 78:13
relation to size of fish, 70:172
depletion dynamics, 74:351
laboratory study, 74:350
trout, 74:166
draining, 80:231
estimation of, 62:307; 80:33, 35
in lakes, 81:4
in streams, 69:231
largemouth bass, 82:61

bluegill, 82:58
DeLury method, 82:48
green sunfish, 82:61
Peterson Method, 82:48
pumpkinseed, 82:61
redear sunfish, 82:53
Schnabel method, 82:48
with shocker, 69:213; 70:407
in Florida lakes, 71:184
in Nova Scotian lakes, 67:178
gill net sampling, 79:195
management, 71:327
minnows in bass stream, 68:332
mortality in little-exploited lakes, 77:114
Oklahoma ponds, 82:173
shad, Atlantic coast, 67:52
spotted gar, 82:17
stability in trout stream, 68:281
standing, in inland waters, 65:350
statistics of, 82:48
stream fish, 82:156, 193
study of, 71:25; 72:177, 187; 80:28
herring, 73:340
Lake Jesse, Nova Scotia, 65:297
trout stream, 64:70; 72:35; 81:260
Texoma lake, 82:214
trout, 81:225, 239
walleye in Iowa, 77:32
Wappapello Lake, 82:245
warmouth, 82:61
Wheeler Reservoir, 71:201
Populus tremuloides, 72:37
Pork melts, in trout diet, 62:127; 72:30
Pork spleen, in trout diet, cause of eye cataract, 63:170
Poronotus triacanthus, 64:390
Portunus sanguinolentus, 74:268
Potamanthus, 70:315; 75:120, 128
Potamilla elonga, 74:274
Potamogeton, 59:176, 258; 60:68, 258; 62:198; 64:94, 182, 443; 67:215; 79:145, 205; 70:225, 382; 73:197; 75:117; 76:187, 345; 78:14; 82:16
americanus, 61:146; 65:186; 75:203
amplifolius, 64:465; 70:194; 72:279; 75:203; 78:146
angustifolius, 71:98; 75:203
compressus, 61:146; 70:194
crispus, 73:379, 382, 390; 75:49
epihydrus, 64:466
filiformis, 61:146; 65:186; 66:182
foliosus, 61:146 ;73:390
friesii, 76:303
gramineus, 75:203
illinoensis, 77:33
interior, 61:146
natans, 62:159; 72:279; 75:203; 77:33; 78:146
panormitanus, 76:303
pectinatus, 66:182, 271; 76:180, 303; 77:33; 82:111
perfoliatus, 64:446
praelongus, 65:124
pusillus, 71:98; 82:111
richardsonii, 77:32; 82:111
Robbinsii, 64:465
vaseyi, 75:203
zosteriformis, 75:203; 76:303; 82:111
Potash, in fertilizer for pond, 68:126
muriate of, 75:336
Potassium, in crab meat, 65:343
in Minnesota ponds, 66:111
pond fertilizer, 76:344
relation to productivity, 76:329
Potassium chloride, in trout spawning, 64:346
Potassium permanganate, in disease control, 62:117; 63:161; 65:86, 88; 66:272, 369; 67:230; 68:146, 180; 70:376; 73:36
rotentilla, 59:177
Predaceous fish, relation to population, 78:163
Predation, brook trout on their eggs, 61:187
by birds, 78:131; 80:261
blue heron in landlocked pools, 60:282
ducks on trout, 66:338
mergansers, 66:335
effect of on marked and unmarked lake trout, 81:17
in ponds, 65:173; 73:259
mosquito fish on mosquito larvae, 61:209
on cisco eggs, 67:252
on Cuban fish, 66:367
on salmon fry, 78:131
on smallmouth bass fingerlings, 66:267
on trout eggs, 62:246
on whitefish eggs, 60:221
pickerel in pond, 59:111
of pike, 80:81
problem in fish culture, 64:318
rosyside sucker on eggs, 69:176
sucker and bullheads on trout eggs, 61:183
Predator, American bittern, 59:22
American merganser, 66:335
backswimmer on bass, 69:122
birds on california bass, 69:123
effect on *gammarus* distribution, 60:89
in angling waters, 70:19
hatchery ponds, 64:129
in Michigan waters, 63:229
insects in Ohio ponds, 62:162
kingfisher on trout, 66:342
muskellunge, 70:424
redbreasted merganser, 66:335
removal by poison, 70:80
removal by nets, 70:382
role in management, 77:297
studies in Michigan, 60:185
tiger beetle larvae on bass, 69:122
water snake, 62:138
Preservation of fish, 70:72
Presidents, past, list of, 59:4; 60:4; 61:5; 62:5 63:5; 64:6; 65:6; 66:6; 67:6; 68:6; 69:6; 70:6; 71:6; 72:6; 73:6; 74:6; 75:6; 76:6; 77:6; 78:6; 79:6; 80:vi; 81:vi; 82:6
President's Address, 59:14; 67:17; 68:18; 69:18; 70:18; 71:18; 74:13; 75:13; 76:392; 77:284; 78:206; 79:236; 80:316; 81:294; 82:294
Press, hydraulic scale impression, 78:32
Pressure, effect on fish, 61:219
Pristis, 78:94
Private propogation, 71:318
Procedures, standardization of, 81:315
Processed fishery products, 70:190, 250
Processing fish food, 71:364
Prochilodus, 65:268
Procladius, 67:219
concinnus, 65:63
Production, alewife fisheries, 73:395
annual, Michigan lake fishing, 65:222
bass fingerlings in Arkansas, 64:130
bass, 62:158; 64:137, 144, 149; 74:338
bass, standard for computing, 64:163
blackhead minnow, 61:136
blue crab, Chesapeake Bay, 62:46
bluegill in fertilized pond, 68:131
bluegill, annual, 80:26
bottom fauna, 66:81; 68:229; 69:180; 71:165
of bottom types, 61:50
button clams, 66:406

carp, in Yugoslavia, 62:394
channel catfish methods, 59:114
cisco in Lake Erie, 60:204
commercial fishing, 61:23
commercial fish in Canada, 61:25
cost of bass, New Jersey, 62:168
cost in ponds, 65:173
crayfish in ponds, 65:190
daphnia in ponds, 64:208
effect of inorganic fertilization on bluegill, 69:257
effect of organic fertilization on bluegill, 69:257
effect of temperature on trout, 63:204
eggs per female, 71:350
experimental farm ponds, Texas, 80:211
fingerling bass in slough, 59:113
in ponds, 59:113
fish and water use, 71:297
fish in Lake Mendota, 59:188
in Minnesota ponds, 66:116
in ponds, 68:309
factors influencing in streams, 67:246
fish food, in Impoundments, 63:269
fish population, Lake Jesse, Nova Scotia, 65:298
fluctuations in commercial fisheries, 61:27
Great Lakes fishery, 66:136
food in Lake Mendota, 59:189
fry from planted eyed eggs, 64:379
fry per nest, 71:357
fry in gravel, 66:280
game fish, factors influencing, 68:303
golden shiner, 61:135
Great Slave Lake, 77:81
lake Dauphin, Manitoba, 65:275
Meander Lake, Ohio, 66:79
municipal ponds, 65:182
terrace water ponds, 69:103
in Virginia Stream, 63:253
Indiana hatcheries, 73:373
lake trout, 76:124, 143, 150
lake trout eggs, 63:64
largemouth bass, 63:164; 64:130
fingerlings, 63:110
measuring in ponds, 72:220
mullet, Florida, 81:69
oysters, Chesapeake Bay, 62:44, 50
in U. S., 63:154
invertebrates in ponds and lakes of Ontario, 59:258
per acre, 71:263, 350, 354; 72:184; 73:142
plankton, 66:80; 68:127, 309
pond fishes, 61:106
ponds, at various stocking rates, 77:149
rainbow trout, 69:187
records, Meander Lake, 79:125
scallop production, Massachusetts, 62:76
shad, 67:52
shrimp, in Louisiana, 62:336
of spotted gar, 82:30
statistics and costs in hatcheries, 80:148
trout, factor influencing, 60:247
in Glacier National Park, 63:205
in New Jersey, 62:126
Fish Lake Utah, 65:122
in Virginia stream, 66:196
yellow perch in small lakes, Michigan, 67:128
in lake Michigan and Huron, 66:144
walleye, 73:243
whitefish, Lake Winnepeg, 65:272
Lake Huron, 76:150
Lake Erie, 77:186
Productivity, above and below dams, compared, 78:75
changes due to fertilization, 78:134
fish ponds, 71:103, 341, 358; 72:224; 73:250; 81:218, 221
impounded waters, 71:87
indices of lake, 76:322
inland waters, 65:350
lakes, 62:307; 66:308; 71:188
lake trout, 70:394
peak of, reservoir, 66:72
plankton vs. temperature, 77:84
poisoned lakes, 75:143
pools and riffles, compared, 78:80
relation to turbidity, 75:304, 315
standardization of terms, 75:164
trout streams, 72:35
T.V.A. reservoirs, 73:137
Program policy for future meetings, 70:41
Promicrops italara, 74:75
Propogation, alewives, 73:413
artificial, effectiveness, 71:118, 352
in relation to abundance of walleye in Lakes uron and Michigan, 66:143
vs. natural, Great Lakes, 66:56, 137
atlantic salmon, 74:188
bait, 71:326
bait minnows, 64:94
bass, in Arkansas, 61:83
blackhead minnow, 61:135
bluegills, 61:106
brook trout, 70:410
brown bullhead, 62:165
bullfrogs, 61:262
carp, 61:132
catfish, 61:106, 116
cooperative, New York, 63:151
creek chub, 75:336
crappies, 61:116
dace, 61:132
Daphnia, 61:109
efficiency, 74:199
egg count, 70:276
forage fish, 65:132
golden shiner, 61:132, 135
goldfish, 61:132
kamloops trout in lakes of British Columbia, 62:144
killifishes, 61:132
largemouth bass, 61:106, 116; 64:127
ling, 69:194
loss of weight by fish, 70:279
methods in Indiana hatchery, 61:116
methods of stocking, 70:452
minnows, need for, 61:131
muskellunge, 70:421
mussels, 59:217
natural, assisting sockeye salmon, 60:265
of pink salmon, 69:237
efficiency of trout in stream, 69:159
new method for trout, 70:430
plankton, in New Jersey hatchery, 62:168
rainbow trout, Missouri, 61:119
redear sunfish, 61:116
results, 73:158
rock bass, 61:116
salmon eggs in gravel and hatchery baskets, 69:132, 135
silvery minnow, 71:215
smallmouth bass, 61:116, 120; 69:119
survival of sockeye fry, 61:122
sockeye salmon, in British Columbia, 61:121
spotted bass, 61:93; 62:185
steelhead trout, 70:217
top minnow, 61:132
trout, 71:361
walleye, 61:116; 66:277
weighing fish, 70:275
yellow perch, 61:116

Proptera alata, 64:446
Prorodon, 69:180
Prosopium cylindraceum, 69:69; **70:162**; 74:234; 77:86; 81:115, 124
williamsoni, 62:252; 63:202; **66:352**; 69:241; 70:233; 75:335; 78:17; 80:99, 251; 81:171, 236, 250, 263
Protection and Legislation, Division of, report, 59:24; 61:27; 62:26; 63:35; 64:38; 65:37; 66:395; 67:27; 68:31; 69:35; 70:28; 71:27; 77:299; 79:253
Protein catabolism, brook trout, 70:290
Protein content, in trout, 68:316
Protein in crab meat, 65:343
in fish meal, 61:65; 64:295
in trout diet, 59:126; 60:129, 141; 61:61; 63:168
requirement for trout, 63:338
Protenthes, 65:63
Proteocephalus, 68:265; 70:165
ambloplites, 59:201; 61:201; 63:29, 222; 66:352, 364; 69:269; 70:166
fluviatilis, 61:201; 63:222; 70:168
larvei, 70:162; 71:287
macrocephalus, 70:167
pearsei, 61:201; 70:167
pinguis, 69:269
Proteus hydrophilus, 64:253
Protococcus, 79:107
Protozoa, 59:174, 176; 60:254, 316; 61:230; 62:394; 63:242; 64:152, 447; 65:118; 69:94, 169, 170, 180, 269; 71:115; 74:22
Protrachypene, 73:311
precipua, 73:312
Prymnesium parvum, 81:222
Psephenus, 60:66; 66:375; 70:320, 322
herricki, 75:53
Psetta maxima, 62:314
Psychodidae, 65:64; 67:219
Psychoda, 63:189; 75:121
Psychomylidae, 80:101, 104
Psychomia diversa, 70:243
Psychomyiella flavida, 70:243
Pseudecheneis, 78:94
Pseudobranchus striatus, 71:187; 79:148
Pseudochloeon carolina, 70:243; 75:53
Pseudomonas fluorescens, 66:360
hydrophila, 78:56
Pseudopleuronectes americanus, 81:325
Psocidae, 65:67; 69:253
Psocids, food of grayling, 68:190
Psocoptera, 69:246
Ptychoptera, 75:121
Pteronarcella, 80:107
badia, 80:102, 104; 81:252, 253
Pteronarcys, 80:104, 107
californica, 80:102, 105
Ptychocheilus grandis, 70:61
lucius, 80:89
oregonensis, 62:253; 64:319; 65:145; 69:198
Publications committee, report, 69:44; 70:34; 71:39; 81:333
Public information on research and stocking, need for, 78:214
Publicity, conservation, 71:317
Public relations, between fish culturists and angler, 59:246
report on, 77:292
Puerto Rico, fisheries, 70:95
Puffer, Hawaiian, 74:267
Pulp and paper industry, stream improvement program, 77:262
Pulvinulina, 74:255
Pumpkinseed, catch, 65:212; 66:90; 67:134; 68:356; 73:232; 78:67; 82:53
coefficient of condition, 75:246
conversion between standard and total length, 75:238
depth distribution, 62:332; 81:125
effect of rotenone on, 68:271
food of, 60:163, 256; 65:59; 67:217
food of Northern Pike, 80:69
rainbow trout, 76:309
rate of growth, 76:65, 72; 77:227; 78:84
hybrids, 75:211; 79:113
in marsh, 70:422
in Michigan lake, 78:146
in Ontario lakes, 81:113
in Wisconsin lake, 82:35
introduced into Oregon, 69:241
killed by rotenone, 70:352; 75:140, 205
length-weight equation, 75:241
length-weight relationship, 75:246
oxygen threshold, 76:32
parasite on, 64:179
population, 72:181; 78:165; 80:198; 81:4; 82:48
estimate of, 82:61
sex ratio, 76:72
size and age composition, 75:209
standing crop, 82:62
tagging, 63:226; 74:360
trapped in weir, 73:80
winter mortality, 76:27; 78:83
year classes, 75:224
Pumps, plankton, 62:292
Pungitius pungitius, 60:66; 65:109, 298; 67:167, 181; 69:149; 76:304, 309, 312
Pupfish, armargosa, in Nevada, 73:190
Purse seine, haul composition in Texas waters, 79:138
Pygosteus puntitius, 60:216
Pyloric appendages, number in Atlantic Salmon, 69:288
Pyrgulopsis, 76:308
Pyridoxine, vitamin in fish, 77:152
Pyrethrin, effect on trout and salmon, 77:163
Pyridylmercuric acetate, in disease treatment, 81:105

Q

Q.., 64:287
Quadrula pustulosa, 64:446
Qualifications, fishery biologists, 70:128
Quebec, aquatic organisms in lakes, 62:198
brook trout stocked from air, 65:277
collection of trout eggs, 64:424
disease in black bass, 63:29
effect of dams, 64:457
fish culture in, 62:224
food of trout, 62:199
fishing legislation, 62:384
heating water in hatchery, 65:340
Octomitus salmonis in brook trout, 65:290
parasites of brook trout, 66:343
physico-chemical analysis, 62:197
plankton in lakes, 64:461
plants in two lakes, 64:464
research in, 63:29, 262
spawning of brook trout, 60:109; 64:458
spawning of fall fish, 64:458
spotted newt in, 64:425
stocking of rainbow trout, 62:197
stocking of smelt, 64:432
trout lakes in, 64:424
vegetation in lakes, 62:198
Quercus, 75:127
Questionnaires, value of, 64:107
Quijo, in Mexican waters, 74:77
Quillback, catch, 73:39; 77:13, 18, 23; 78:165
effect of tag on, 63:320
in Ohio Stream, 66:317
midge larvae as food of, 59:155

parasites of, 66:358
removal, 70:384
tagged, 68:258
Quillwort, in Quebec, 64:465
Quinine, in plcer disease treatment, 68: 147
Quotas, license, 71:329

R

Raceways, artificial propogation in, 75: 336
graveled, 66:283
Rachionectes glaucus, 67:257
Rachycentron canadus, 79:141
Radiation, biological effects of, 79:224
exposure of aquatic organisms to, 79: 221
treatment for diseases of fish, 61:77
Radioactive wastes, significance of, 79: 217
source and nature of, 79:217
Radio telephones, installed on boats, 63:32
Radix japonica, 79:226
Rainfall, total and catch of white shrimp, 82:152
Rana, 76:111
aurora, 82:148
catesbiana, 61:262; 75:58; 82:148
clamitans, 64:71
Ranunculus, 66:182; 81:203
fluitans, 66:384
longirostris, 76:303
Ranatra, 70:423; 82:16, 19
Raphidascoris brachyurus, 63:223
Rate of flow, limits insects, 70:246
Ratio, availability to utilization, 71:275
body-scale, 73:91
food requirements, 73:118
lengths, 73:91
sex, tullibee, 73:131
Rattulus carinatus, 66:125
Rays,zymogen granules in, 72:263
tagging of, 73:321
Recaptures, marked fish, 79:158
locality of, sea lamprey, 82:126
Reclamation, bureau of, 70:47, 56; 80:347
Reclamation of fishing waters, 71:333
Recovery, electrically stunned fish, 77:56
marked trout, 70:448; 71:261; 73:110, 114, 166; 74:172
poisoned fish, 75:205
rate, sea lamprey, 82:126
stocked trout, 72:160; 81:59
tagged fish, 66:319
lake trout, 82:74
tags, methods, 73:344
Recruitment and yield, 76:287
sauger, 79:40
yellow perch, 79:40
Redfish, potential yields, 71:65
Redhorse, catch, 72:214; 73:39; 82:248
collected by shocker, 77:55
food of, 60:254
kingfisher, 76:101
in Des Moines River, Iowa, 75:116
midge larvae as food of, 59:155
population, 80:28, 30, 36
trapped in weir, 76:165
Redhorse, black, catch, 82:245
collected with rotenone, 80:37
Redhorse, golden, catch, 82:245
effect of pollution on, 82:160
in bass stream, 82:193, 200
production in Ohio lake, 79:129
Redhorse, northern, catch, 82:245
population, 78:165
trapped in weir, 73:76
Redhorse, pealip shorthead, catch, 82:245
Redhorse, river, catch, 82:245
Redlake charr, taxonomy and habits, 72:87
"Red wastes" effect on fishes, 73:46
Refrigerated lockers, 70:260
Refrigeration of fish, 70:72
Refuges, fish, Columbia River, 78:54
role of, 63:77
Upper Mississippi Wildlife, 63:99
vegetation control on, 61:143
Regeneration, fin, 80:262
lake trout, 77:129
king salmon, 77:132
Regional Division, Committee on, report, 81:329
Regression, weight on length, 71:272
Regulation, changes in State, 71:27
fishing in Great Smoky Mountain National Park, 68:93
fishing intensity, 71:144, 329
fishery in Mexico, 67:43
governing sockeye salmon, 60:263
international, uniform, 61:30
on northern pike, 62:328
on pacific halibut, 63:85
uniformity of, 61:27; 63:34
Whitefish fishery, Lake Winnepeg, 65: 272
Reptilia, food of brook trout, 60:67
Research, aims in Canada, 62:264
beginning of fisheries, 69:28
in fish culture in Canada, 62:261
fisheries, 60:182; 63:257
benefit of international cooperation, 67:147
problems of in Canada, 60:172
Maryland, 62:250
need of, 60:21; 63:79
of Ontario Fisheries Laboratory, 60:178
on blue crab, Maryland, 62:53
on rock, Chesapeake Bay, 68:364
oyster, Maryland, 62:50
oyster farming, 62:72
principles of biological, 66:188
shad, Chesapeake Bay, 68:364
technological, commercial fisheries, 66:37
Respiration, effect of numbers on, 63:26
effect of temperature on, 62:121
factors influencing movement, 59:239
in trout, 68:344
normal movements, 59:238
physiology of, 63:29
Reservoirs, age of, influence, 66:66
as angling waters, 70:19
chemistry of, 68:203
depth distribution of fish, 75:65
fishery problems, 66:63
flood control and conservation, 77:254
headwater, 60:285
in England, 66:285
irrigation, 71:298, 311
minnows as index to suitability, 62:290
new, suitable to fish life, 62:275
Ohio, bottom fauna production, 66:81
Ohio, plankton production, 66:80
power, 71:311
peak of productivity, 66:72
Sacondaga, program for, 61:139
seven year stocking study, 68:221
stocking of, 66:71
study of, 66:76
T.V.A., 66:398
water supply, influence, 66:68
Resistance to ulcer disease, 70:377
Resolution, amendment to by-laws, 70:46; 71:51; 76:434; 81:350; 82:332
amendment to constitution, 64:41; 76: 436
continuance of special committee for revision of constitution and by-laws, 77:328

committee on revision of constitution and by-laws, 78:249
American Wildlife Institute, 65:43
Appreciation to John D. Dingell, 79:299
Authorization for establishment of Regional Divisions and of a Western Division, 78:246
Carlos Avery, 61:29
Barkley Pollution Bill, 70:48
Biological Forces of Nature, 62:37
Dr. Edward A. Birge, 70:48
The Honorable H. Francis G. Bridges, in Memorium, 77:333
California Sardine, 66:41
Special Committee to consider increase in Dues, 76:434
Changes in Rates in Dues, 78:250
Commending retiring officers, 70:48
Committee on Employment and Professional standards, 80:363
Ad hoc committee on Employment and Professional Standards, 81:351
Committee on Scientific Names of Fishes, 62:36
Committee on Standardization of Terminology and Procedure, 76:436
Complete protection of Sturgeon, 62:35
Conservation Radio Broadcast, 64:40
Conservation in relation to proposed Japanese Peace Treaty, 77:329
Coordination of Federal Conservation Activities, 62:36
Cooperation with state and Federal Agencies, 66:41
Acknowledgment of Courtesies, 59:37; 60:25; 61:30; 62:37; 63:46; 64:40; 65:43; 66:42; 67:36; 68:54; 69:53; 70:48; 71:54; 76:440; 77:333; 78:251; 79:304; 80:364; 81:351; 82:334
Curtailment of appropriations, 62:34
Dams, impounding studies, 60:25
High dams, 71:52; 79:303
Dams on important fishing streams, 71:53
construction of, 76:438
Mining City project, 79:301
Deceased members, 69:52; 71:54
Death of John W. Titcomb, 62:33
Deep water trap nets, 62:35
Development of territory of Alaska, 79:302
Donation of copies of Transactions to Philippine Bureau of Fisheries, 76:439
Establishment of Western Division, 77:327
Expert Analyses of Cost-Benefit ratios set up by Federal Agencies, 77:330
Expression of Gratitude, 82:334
Favoring the Tackett Bill, 81:349
Facilities for Instruction and Training in Fish Culture, 76:438
Federal Aid in Fisheries Work, 67:35; 70:47; 71:53; 76:437; 79:299; 80:362
Administration of Federal Aid to Fisheries, 79:300
Federal Water Power, Irrigation and Flood Control Projects, 70:47
Fish and Wildlife on Military Reservation, 79:300
Floating Sardine Reduction Plants, 63:43
Frasier River Salmon Fisheries, 60:24
Game-Fish Policy, 63:46
Honorary Membership to James A. Rodd, 78:250
Hoover Commission Report, 79:298
Black Bass Law Enforcement, 59:36; 60:25; 62:37; 63:44
Great Lakes Fisheries Treaty, 59:35; 77:332; 79:299
Great Lakes Fisheries, 62:34; 63:43
Great Lakes Fishery, International Board of Inquiry, 68:53
Great Lakes Fishery Convention, 76:439
Ice Harbor and three other proposed dams on Lower Snake River, 80:363
Impairment of activities of U. S. Bureau of Fisheries, 62:34
Income for U. S. Forest Service, 79:302
International cooperation—action upon treaties and conventions, 66:40
International participation and coordination, 79:304
Lower Snake River Dam construction, 81:349
Membership Committee, 78:248
Mundt Pollution Bill, 69:52
National Parks Standards, 59:36; 60:24
North Pacific Fishery, 69:52
Henry O'Malley, 66:40
Oyster Industry, 59:36
Pollution of Lakes and Streams, 59:36; 66:41
Water Pollution, 60:24; 71:53; 82:333
Pollution, 63:44; 64:41
Federal Water Pollution Act, 68:53
Pollution control, 76:437
Pollution Study Committee, 78:249
Stream Pollution Abatement, 79:300
Pollution Abatement, 80:364
Oil Pollution, 60:24
Pollution of Potomac River, 62:37
Progressive Fish Culturist, 70:47
Proposed International Convention for Northwestern Atlantic Fisheries, 77:330
Proposed International Fisheries Convention between the U. S. and the United Mexican States, 77:332
Publications of the American Fisheries Society, 80:362
Special Committee on Publication of the Transactions, 82:331
Publication of Western Division Papers, 80:362
Public Fishing Rights on Federally Impounded Waters, 81:350
Public Lands Question, 77:328
Quetico-Superior Memorial Forest, 79:303
Regional Division, 80:361
Regulation of Public Waters at the Source, 60:24
Regulation of Waters, 61:29
Reorganization of the Editorial Board, 78:249
Representation at Society Meetings, 79:304
Review of Fisheries Publications, 82:333
Sealing of Abandoned Coal Mines, 63:42
the late Lester Smith, 68:54
Special Five-year building program for the U. S. Bureau of Fisheries, 68:64
Sport Fishing Institute, 80:364
State Control of Hunting and Fishing on Federal Lands, 82:333
Submission of Papers for presentation at Annual Meetings, 62:36
Tennessee River Watershed Lands, 63:44
Tennessee Valley Agriculture and Fishing, 63:45
the late Chas. F. Thompson, 67:35
Uniform International Regulations, 61:30

Uniform Season on Lake Erie, 62:35
Valley Authorities, 79:301
Water Purity Standard, 65:43
Senate Wildlife Resources Committee, 68:53
For Wildlife Resources Committee in House of Representatives, 63:42
to Mr. Young, 81:351
Resorcinol, in disease treatment, 63:172
Resources, aquatic, depletion of, 60:279
Restoration, alewife fisheries, 73.394
Returns, tagged haddock, 71:231
Rhabdocna, 70:163
cascadilla, 70:164
Rhagionidae, 73:202; 76:109
Rhamphidia, 75:121
Rhaphidolabis, 71:221; 75:121
Rhinichthys atratulus, 68:285; 69:212; 70:313; 71:107; 76:109, 209; 78:199; 81:45; 82:160
atronasus, 64:71; 69:154; 75:50, 55
cataractae, 59:259; 69:212; 71:107; 75:330; 76:208; 80:100; 81:290
meleagris, 81:227
osculus, 80:87
Rhithrogena, 80:104
Rhoicosphenia acuminatum, 64:447
curvata, 66:121
Rhode Island, alewife fisheries, 73:395
legislation, 59:28; 63:35; 64:38; 64:99; 65:37; 71:27
oyster production, 63:156
Rhyacophila, 60:65; 71:220; 80:102, 104
carolina, 70:243
fuscula, 70:243
Rhynchophora, 63:255; 66:197; 67:216
Riboflavin, requirement of trout, 74:81; 76:41
vitamin in fish, 77:152
Riccia, 59:177
Richardsonius balteatus, 64:319; 65:145; 81:171, 236, 250
Ring tag, 73:324, 336
Rithrogena, 81:253
elegantula, 81:252
mimus, 81:252
River basin, studies on, 79:272
River control, effect on Atlantic Salmon migration, 64:352
Rivularia, 64:465; 65:118
Robalo, in Mexican waters, 74:75
Roccal, hatchery disinfectant, 74:209
Roccus lineatus, 66:403; 67:67; 68:364; 69:180
saxatilis, 69:241; 73:364
Rock, research on, 68:364
in Virginia waters, 73:364
Rockfish, commercial production, 80:352
in trawl fishery, 69:107
sport fishing for, California, 69:117
Rocking, temperature effect on, 62:124
Rockweed, used by spawning herring, 64:307
Roncador stearnsi, 74:77
Rosefish, commercial catch, 82:321
name change, 81:326; 82:327
Rotifers, effect of copper sulfate on, 65:118
effect of fertilizer on, 64:152; 73:254
effect of pollution on, 60:316
effect of rotenone on, 69:152; 70:350
food of common shiner, 60:255
flag fish, 82:22
golden topminnow, 82:29
least killifish, 82:24
mosquito fish, 61:211; 82:26
redfin killifish, 82:28
sail molly, 82:22
sucker, 60:254
spotted gar, 82:20
in Hocking River plankton, 61:204
in lake associations, 59:174
in Lake Erie, 63:277
in Minnesota ponds, 66:116, 124
number in fertilized pond, 59:98
standing crop, 59:191
Rotenone, as fish poison, 69:141; 70:80; 72:42
effect on aquatic life, 70:350
effectiveness in pond reclamation, 82:166
in population study, 72:177, 187, 267; 80:28, 33, 35; 82:246
in stream, 80:235
method of application, 70:82, 143, 349; 72:268; 75:37, 203; 82:174
Michigan experiments, 75:139, 200
solubility of, 70:352
treatment, 71:187
kostellaria, 78:94
Rough fish problem, 71:267
T.V.A., 73:137
removal, 71:319; 78:167; 80:52; 81:316; 82:106
effect of, 82:104
as management technique, 82:113
Roundworms, food of channel catfish, 67:220
mimic shiner, 67:222
in bottom fauna, 72:56; 73:200
in brook trout, 66:344
in fish, 68:265; 66:357
in pickerel and pike, 69:268
production in trout stream, 68:232
Rush, needle, in Michigan Lake, 75:203
Russia, salmon in, 62:394
Rutger 612 repellent, effect on salmon and trout, 77:163, 171
Rutilus rutilus, 62:314

S

Sabalo, in Mexican waters, 74:74
Sabalote, in Mexican Waters, 74:74
Sablefish, commercial production, 82:324
Safety-pin tag, 73:324, 336
Sagittaria, 59:176; 64:443
graminea, 64:466
lancifolia, 79:146
latifolia, 64:466
Sago pondweed, in sewage plant pool, 64:446
Sailfish, Hawaiian, 74:265, 267
Sailfish, in Mexican waters, 74:77
Saithe, tagging, 73:321
Salamander, effect of rotenone on, 71:187
food of brook trout, 63:187
red-backed, food of brook trout, 60:67
two-lined, food of brook trout, 60:84
pacific giant, caught in weir, 82:148
Salinity, effect on fisheries, 64:385
Nova Scotia coastal waters, 65:280
of Texas Rivers, 64:82
trout blood, 74:297
Salix, 75:127
Salmo, 64:323; 76:109, 112
agua-bonita, 64:259; 73:189
clarki, 60:233; 62:252; 64:393; 67:233; 69:241; 70:233; 72:145; 80:100; 252; 81:171, 235, 244, 250, 263; 82:139
henshawi, 69:216; 71:254; 73:175, 181; 74:281
lewisi, 63:198; 69:283; 73:176
pleuriticus, 63:198; 65:126
stomias, 73:189
utah, 73:177; 81:236
evermanni, 67:141
gairdneri irideus, 60:216, 233; 62:197, 240; 64:156, 167; 65:369; 66:395;

67:141, 232, 272; 68:96, 196, 285, 316; 69:69, 135, 180, 220, 241 279; 70:61, 82, 209, 233, 264, 272 282, 408, 414, 446; 71:74, 107, 180, 278, 354; 72:30, 92, 151; 73:52, 87, 117, 178, 189; 74:63, 166; 75:77, 140, 323; 76:34, 109, 112, 165, 179, 204, 290; 77:61, 66, 75, 93, 105, 152, 162; 78:17, 43, 59, 71, 147, 242; 79:21, 94; 80:88, 93, 100, 185, 241, 251; 81:102, 171, 203, 219, 224, 236, 250, 263; 82:139
gairdneri kamloops, 60:247; 62:144; 69:188
gilberti, 64:167
gibbsii, 63:198
nelsoni, 67:139
newberri, 64:167
roosevelti, 64:259
salar, 62:314, 366, 394; 64:156; 65:152; 67:89; 69:154, 280, 285, 290; 70:123, 298; 71:278, 284; 74:188, 293; 77:172; 78:128, 189; 80:41; 81:326
sebago, 69:280; 73:188; 81:326
shasta, 64:156, 167; 66:352
trutta, 62:240, 314, 395; 64:156; 65:369; 68:96, 285, 316; 69:212, 220, 241, 280; 70:61, 82, 154, 233, 290, 408, 446; 71:106, 195, 236, 254, 278; 72:151; 73:108, 174, 209; 74:35, 166; 75:59, 140, 147; 76:34, 109, 111, 204, 304; 77:26, 65, 93, 109, 152; 78:59, 117, 147; 79:21; 80:41, 89, 93, 100, 185, 241, 252; 81:102, 171, 203, 224, 236, 250, 263
whitei, 64:259
Salmon, abundance decline, 74:181
artificial propogation, 74:188
by-product in hatchery diet, 65:165
canned, 1941 pack, 71:33
for fish food, 59:268; 61:81; 62:233
cycles, 74:195
diet of, 64:155
effect of insecticides, 77:160
eggs in trout diet, 60:157
egg meal, in trout diet, 63:167; 64:157; 65:161, 305
fishing rights, Japan vs. U.S., 68:36
flukes in, 64:394
hatchery food, 59:161; 65:383
homing proclivities, 73:339
India, 78:94
industry, 71:310
landlocked, effect of carbon dioxide concentration on, 61:223
in Connecticut, 71:333
in Nevada, 73:188
meal, hatchery food, 67:264
migration, 70:58
mortality in hatchery, 67:266; 70:280
offal, frozen, food of sockeye, 62:233
planted, in Minnesota, 59:225
planting of eyed eggs, 64:379
potential yields, 71:68
production of, 61:24; 78:43; 80:355; 82:321
raising of, Ontario, 60:45
regeneration of fins, 77:132
relation to freshets, 75:259
in Russia, 62:394
scales, measuring of, 74:59
summary of tests of hatchery foods, 67:262
tagging, 73:321
value of in Washington and Oregon, 64:88
Salmon, atlantic, catarrhal enteritis, 70:298
change in egg volume, 71:284
characteristic of parr, 66:221
coefficient of condition, 67:197
culture of, 62:211; 67:89
effect of rotenone on, 69:154
eggs of, incubation period, 62:212
eggs, production, 69:285
retention, 74:293
food of, 65:153
fry of, 62:217
growth of, Canadian hatcheries, 62:211
growth rate, 62:305; 65:157; 66:211; 67:184
growth control chart, 78:189
history, St. Lawrence River, 62:366
introduced into Argentina, 69:279
Moise River, Quebec, 67:195
migration of, 64:225, 351, 360; 69:290
mortality after spawning, 64:219, 417
number of pyloric appendages, 69:285
ocean feeding grounds, 62:304
parr in Newfoundland Rivers, 66:211
predation on fry, 78:131
Prince Edward Island, 60:101
reintroduction into Lake Ontario Streams, 68:128
relation of sucker to, 65:152
restoration in New England, 70:123
scale studies, 64:103
size of egg, 62:214
spawning of, 64:211
stocking policy, 71:352, 360
in Swedish waters, 80:41
weight fluctuation, 62:305
Salmon, chinook, anesthesia of, 72:25
blood count, 80:190
diet of, hatchery, 65:165; 73:63
effect of dams on, 71:310, 333
effect of fin removal, 80:265
effect of low oxygen concentration, 69:197
effect of placer mining silt on, 69:225
egg output, British Columbia, 61:165
fecundity, 70:63
growth in hatchery, 67:264
in California, 70:57
in Columbia River, 78:43, 47
in feeding experiment, 59:269
in Nevada, 73:196
introduced into Argentina, 69:280
introduced into Pyramid Lake, 69:220
loss of in hatcheries, 70:280
migration, 82:148
name change, 82:327
Oregon native, 69:241
oxygen consumption, 74:214
production, 82:321
salvage, 70:55
sex ratio, 70:63
tagging of, 62:90
Salmon, chum, decline of fishery, 78:43
in Nevada, 73:189
lengths of, 82:144
migration, 82:139
tagging, 62:92
Salmon, coho, effect of fin removal, 80:270
eggs reared in gravel, 69:132, 135
expansion of hatchery, 79:247
growth in hatchery, 67:266
in Columbia River, 78:43
in Nevada, 73:190
introduced into Argentina, 69:280
introduced into Pyramid Lake, 69:220
lengths of, 82:144
loss in hatchery, 70:280
migration of, 69:180; 82:139
name change, 82:327
number of erythrocytes in blood, 80:184
Oregon native, 69:241
rearing eggs in gravel, 69:135
Salmon, kokanee, production, 76:16
Salmon, pink, commercial production, 80:352

natural propogation of, 69:237
production, 82:321
tagging, 62:92
trapped in weir, 80:45
Salmon, pacific, infected with furunculosis, 62:252
International Federation, 64:21; 65:23
investigations, 69:30
tagging, 62:88
Salmon, sockeye, artificial food for, 62:228
artificial propogation, 61:121
assisting natural propogation, 60:265
columnaris disease, 73:32
conservation in British Columbia, 60:262
convention, 67:23
counting weir, 61:129
effect of dams on, 60:268
effect of pollution on, 60:267
effect of low oxygen on, 69:197
egg output, British Columbia, 61:165
eyed eggs, planting with success, 61:124
finclipping, 61:126
fingerling plantings, Cultis Lake, 60:116
fisheries, 70:30
food utilization, 70:339
Fraser River, 71:35
fry, depth plantings, 59:84
growth in hatchery, 67:266
hatchery fry in gravel, 66:279
in Columbia River, 78:43, 47
in Cultis Lake, B.C., 60:173
in Glacier National Park, 66:396
in Nevada, 73:190
international treaty, 66:25
introduced into Argentina, 69:280
life history, 60:262
migration, 61:122
mortality of fry, 61:122
mortality in hatchery, 70:339
name change, 82:327
natural propogation, 61:121
number of eggs, 60:262; 61:122
Oregon native, 69:241
parasites of, 61:129
produced runs, 65:204
reaction to power dam, 60:244
regulations in British Columbia, 60:263
retention ponds, 61:124
spawning of, 60:262
survival of fingerling plants, 61:126
survival of fry, 61:123
tagging of, 60:264; 62:92
trap, 75:97
treaty, 59:32
Salmonicola edwardsii, 63:233; 65:334
Salmonidae, 60:121, 217; 72:263; 80:88
Salmonids, improvements in culture of, 81:319
migration of, 82:139
Salmonoids, pond culture in British Columbia, 65:172
Salmon Trout River, results of stocking, 70:249
marking experiments, 70:459
Salol, in disease treatment, 63:172
Salt, control of diseases in hatcheries, 62:114
development of glochidia in, 59:221
in trout diet, 59:126; 60:129, 133, 141; 61:61
disease treatment, 61:114; 68:146, 180
ectoparasite treatment, 59:200
fungus treatment, 63:242
Salting of fish, 70:72
Salts, metal, toxicity thresholds of *Daphnia*, 78:96
Salvage, anadromous fishes, 72:25
migratory fishes, 71:302
Salvelinus alpinus, 60:216, 233; 64:395; 72:79; 79:26; 81:326
fontinalis, 60:64, 173; 62:239, 332, 344, 379; 63:241; 64:71, 155, 356, 424, 458; 65:109, 152, 161, 298, 361, 369; 66:343, 380, 385; 67:91, 94, 122, 181, 228; 68:96, 196, 285, 316; 69:148, 212, 220, 280; 70:82, 162, 221, 249, 267, 282, 290, 297, 304, 354, 369, 393, 397, 407, 410, 446; 71:236, 278, 286; 72:37, 92, 151, 264; 73:108, 210; 74:35, 81, 166, 281, 297; 75:20, 36, 140, 165, 181, 259, 264; 76:34 , 82, 109, 112, 165, 204, 248, 280, 304; 77:26, 93, 105, 152, 172; 78:17, 56, 71, 114, 131, 147, 181; 79:24, 77; 80:45, 100, 158, 185, 241, 251; 81:102, 113, 115, 124, 170, 203, 224, 236, 263
malma, 62:252; 69:241; 72:79; 75:335; 77:162
namaycush, 59:259; 60:232; 61:183; 62:332, 377; 64:156, 231; 65:126, 369; 67:155; 68:316; 69:65, 220, 241, 280; 70:77, 82, 172, 393; 71:272, 286; 73:20, 47, 52, 180; 74:234; 75:19, 323; 76:121, 150, 301; 77:14, 129; 78:17, 176; 79:21, 71; 80:185, 260, 280; 81:17, 111, 113, 115, 120; 82:69, 178
Sambuscus simpsonii, 79:146
Sample, bottom fauna, 80:53
bottom fauna method, 68:339
size of, in growth samples, 79:192
Sampler, for fry, 72:236
stovepipe, for bottom fauna, 71:167
Sampling, fish trap, 80:28, 38
hoop net, 80:28, 38
methods, comparison of, 80:38
fishing intensity, 72:246
population, 71:25
rotenone, 80:28, 33, 35
sub-stratified, 79:205
use of gill nets for, 79:195
wire basket, 80:28, 38
Sandhills, Wildlife Management Area, 72:204
Sand Lance, in hatchery diet, 64:157
Saprolegnia, 61:194; 64:254; 71:218; 77:77
ferax, 63:242; 70:264
invaderis, 70:264
parasitica, 70:264; 81:99
Sarcodina, 66:123
Sarcophaga, 75:121
Sarda chiliensis, 67:258
lineolata, 74:72
sarda, 64:157
velox, 74:72
Sardina caerulaea, 80:112
machete, 67:258
melanostica, 80:112
pilchardus, 80:112
sagax, 80:111
Sardine, food of Texas fish, 79:141
in hatchery diet, 64:157
in Mexican waters, 67:258
taxonomy, 80:114
Sardine, California, commercial catch, 82:320
investigations, 68:29
name of, 70:32
in Mexican waters, 74:72
Sardine, pacific, international cooperation, 67:152
Sardinella longiceps, 78:94
stolifera, 67:258
thusina, 67:258
Sardinops, 80:115
caerulea, 74:72
neopilchardus, 80:115
sagax, 80:115
Sargis annularis, 63:210
Saskatchewan, fish culture in, 60:119

fishing industry, 60:215
fry planting, 60:116, 119
northern pike in, 62:323
Sauger, age composition, 79:35, 40
catch, 60:229; 71:203; 72:214; 73:39; 77:13; 79:169, 178, 188
depth distribution, 76:65
fluctuation in, 73:105
food of, 60:229
growth rate of, 60:229; 75:306; 77:197; 79:30
in Manitoba, 79:22
mortality rate, 77:114, 119
in trap nets, 62:103
potential yields, 71:69
year classes, 75:308
Saurida gracilis, 74:267
Savings gear, 72:257
Scale impressions, measurement for growth computation, 78:156
hydraulic press for, 78:32
Scale method, recording measurements, 74:59
walleye, 73:90
Scales, from atlantic salmon, 66:212; 67:192
formation on golden trout, 64:261
growth comparison, 71:74
largemouth bass, 66:251
muskellunge, number of circuli, 70:428
rainbow trout, 63:362
Scale studies, atlantic salmon, 64:103
brook trout, 62:348
cisco, 67:235
use of growth data in, 79:187
Scallop, production of, 62:76
quick freezing, 62:80
Scapholeberis, 59:99; 63:396; 64:152; 67:219; 80:73, 76
mucronata, 62:320; 63:379; 65:62, 64-66; 70:357
Scarabidae, 63:255; 66:197; 69:247, 250, 253
Scenedesmus, 59:97, 60:254; 65:118; 66:288; 68:128; 73:392; 79:107; 82:22
bijuga, 66:119
dimorphus, 66:120
quadricauda, 66:119
Schilbeodes, 59:110; 63:71; 77:60
gyrinus, 64:374; 65:63; 82:15
insignis, 68:331; 82:193
leptocanthus, 80:37
mollis, 76:27, 304; 80:120, 175
Schizothorax, 78:94
Sciadeichthys troschelii, 74:76
Sciaenidae, 60:217
Sciaenops ocellatus, 79:47, 139, 141
Scientific names, Committee, report, 63:23; 64:25; 65:26; 71:38; 75:353
Scirpus, 59:176; 64:278; 67:179, 215; 69:145; 70:382; 75:324; 76:187; 78:64
acutus, 76:303; 77:33
validus, 75:203
Sclerotis punctatus, 68:267
Scomber, 78:94
colias, 80:111
japonicus, 64:157; 80:111
scombrus, 64:157; 80:184
Scomberomorus cavallo, 79:142
maculatus, 79:139
sierra, 74:76
Scombridae, 80:111
Scombrops, 80:129
Scotland, parasitic infestation in fish, 64:390
Screen, diversion, Washington, 61:270
Screening diversions, 71:304
Scuds, effect of rotenone on, 68:271
food of brook trout, 60:82; 66:344
brown bullhead, 69:206
brown trout, 71:109
grayling, 68:190
ling, 69:195
mooneye, 67:216
rainbow trout, 66:197
in bottom fauna, 64:241; 66:183
Sculpin, collected by shocker, 69:212; 81:66
competitor of trout, 66:380
effect of insecticides on, 77:162
food of, 66:374
brook trout, 60:66, 84
burbot, 80:56
kingfisher, 76:111
ling, 60:199
in British Columbia, 64:319
in coastal lagoon, 69:180
in trout waters, 59:258, 260
population in streams, 76:208
Sculpin, Beldings, in Utah, 81:250
Sculpin, deep water, in Lake Ontario, 74:236
Sculpin, fresh water, in Illinois bass stream, 82:202
in Montana stream, 81:260
Sculpin, northern, in Lake Ontario, 74:236
Sculpin, prickly, trapped in weir, 82:158
Sculpin, Utah, in Logan River, 81:171
life history, 81:248
Scup, potential yields, 71:66
tagging, 73:321
Scyphidia, 70:443
amoebae, 72:198
annulata, 72:198
micropteri, 69:169; 72:197
rhizopoda, 72:198
tholiformis, 72:197
Scylla serrata, 74:267
Scytonema, 61:210
Sea cucumber, oxygen consumption, 63:211
Seals, treaty on, 63:20; 64:21; 65:22
Seals, fur, 61:36
Seal meat, hatchery food, 67:265
Seasons, closed, 59:69
for mussels, 59:223
problem of, 60:19
food of brook trout in, 60:73
removal of, results, 78:64
variation of bottom food, 81:211
Sebastodes, 69:107, 117
alutes, 82:321
Sea Fisheries Protective Act, Great Britain, 67:22
Sea trout, in Chesapeake bay, 62:47
Secretary-Treasurer, Report of, 59:16; 60:13; 61:13, 62:16; 63:15; 64:15; 65:18; 66:18; 67:19; 68:19; 69:20; 70:21; 71:19; 72:14; 73:13; 74:14; 76:395; 77:287; 78:210; 79:240; 80:321; 81:299; 82:257
Seining, commercial, in Louisiana, 59:210
for bait in Minnesota, 59:229
comparison between net and electric shocker, 69:213
electric, 69:210; 77:49; 81:63, 225, 262; 82:194
removal of rough fish, 70:382
Selenastrum, 66:288
Semotilus, 61:132
atromaculatus, 59:198, 252; 60:66; 64:71, 94; 65:109, 298; 67:122, 181; 68:258, 285; 69:212; 70:82, 164; 71:107; 75:133, 336; 76:109, 111, 166, 208, 304, 309; 78:131, 199; 80:69; 81:113, 115, 227; 82:160, 193
Senescence, re smelt mortality, 74:319
Sericostomatidae, 69:248
Seriola colburni, 74:72
dorsalis, 67:258; 69:117; 74:72

Serranidae, 60:217; 71:203
Serranus, 78:94
Serrasalmonidae, 65:268
Setodes, 75:121, 128
Sewage disposal, in clean stream campaign, 62:357
in Ontario, 60:308
Sewage, domestic, pollution from, 63:71
effluent, bacteriological analysis, 64:445
chemical analysis, 64:444
effect on fish, 64.443
effect on oxygen, 64:445
effect on plants, 64:443
pollution, Holston River, 63:202
raw, from Washington, D. C., 62:30
treatment, 77:273
Sex determination, sculpin, 81:257
Sex ratio, black crappie, 76:76
bluegill, 76:68
channel catfish, 80:119, 138
chinook salmon, 70:63
croaker, 70:478
cutthroat trout, 81:235, 244
kiyi, 74:133
largemouth bass, 76:78
longjaw cisco, 76:243
northern pike, 71:155
pumpkinseed, 76:72
Reighards chub, 72:130
rock bass, 76:74
salmonids, upstream migrants, 82:144
sauger, 79:34
smallmouth bass, 76:80
smelt, 72:259
shad, 67:61
tullibee, 73:131
walleye, 73:99
whitefish, 77:238
yellow perch, 70:120; 76:65, 70; 79:39
Sexual cycle, modification of, by light control, 80:158
Sexual development, croaker, 70:475
Sexual dimorphism, smelt, 72:259
Sexual maturity, walleye, 73:90
Shad, decline in catch, 59:24; 67:26; 71:144
effect of pollution on, Connecticut, 61:160
effect of vacuum, 70:469
in Chesapeake Bay, 62:47
in Nevada, 73:188
in Virginia, 73:364
interstate action on, 67:151
investigations, 69:31
length classes, 67:61
movement in Chesapeake Bay, 67:80
migration, Sacramento River, 70:61
morphological characteristics, 67:54
physiological characteristics, 67:60
population, Atlantic Coast, 67:52
potential yields, 71:66
production, 61:24; 62:48
relation to freshets, 75:264
research, Chesapeake Bay, 68:364
runs in Florida, 78:40
spawning of, 81:78
stocking of, Maryland Streams, 60:261
transportation of, 59:25
Shad, gizzard, catch in Alabama, 80:30, 38
in Missouri, 82:245
in Ohio, 79:133, 135
in reservoir, 73:39
collected by shocker, 77:57
effect of carbon dioxide on, 67:279
effect of pollution, 63:71
environment of, 59:253
food of, 65:61
black crappie, 79:147
burbot, 80:64
channel catfish, 75:118
white bass, 82:213
forage fish in impoundment, 62:276
forage fish, 63:57; 76:47, 53, 61
in Florida waters, 73:275; 78:39
in Louisiana, 82:256
in ponds, 69:257
in reservoir, 68:221
in Tennessee, 68:244
in T.V.A. waters, 71:349
introduced into Oregon, 69:241
killed by lack of oxygen, 64:374
mortality in Niagara River, 68:247
sporozoa parasites in, 61:202
stocked in Michigan, 70:195
in Ohio, 78:66; 79:127
in Virginia, 80:208
Shad, lesser, food of black crappie, 79:147
Shark, in Mexican waters, 74:73
in trawl fishery, 69:107
potential yields, 71:66
zymogen granules in, 72:263
Shark, dogfish, zymogen granules in, 72:264
Shark, mackerel, name change, 82:327
Shasta Dam, salmon salvage, 70:55
under construction, 71:303
Sheepshead, age and growth, 79:43
catch of, 71:203; 73:148; 79:44
effect of tag on, 63:320
effect of vacuum, 70:469
food of, Lake Erie, 63:389
alligator gar, 70:358
burbot, 80:56
growth, 75:306; 77:180
in prairie provinces, 60:233
in pond, 79.123
in trap nets, 62:103
population of, 80:28
potential yields, 71:69
production, 78:165
rough fish removal, 82:104
year classes, 75:308
Sheep hearts, food of largemouth bass, 63:164
in trout diet, 63:167; 64:157
Sheep liver, in trout diet, 63:167; 64:157
Sheep plucks, in trout diet, 59:161; 62:127; 63:171
Shellcracker, Hybrid, 79:112
in Florida waters, 79:157
parasites of, 68:267
stocked in pond, 80:221
Shellfish, importation of, 71:33
menace of starfish, 62:76
quickfreezing, 62:80
Shiner, catch in Michigan, 65:221
food of burbot, 80:56
northern pike, 60:255
in Fish Lake, Utah, 65:127
killed by rotenone, 80:80
oxygen threshold, 76:32
population study, 72:178
Shiner, black-chinned, effect of rotenone, 72:270
food of lake trout, 76:312
northern pike, 80:69
rainbow trout, 76:309
in Canadian marsh, 70:422
mortality, 76:27
Shiner, blacknosed, food of northern pike, 80:69
rainbow trout, 76:309
in Canadian marsh, 70:423
in Ontario, 81:115
in small lakes, 67:122
in trout stream, 76:250
killed by rotenone, 70:144; 72:270
mortality, 76:27
oxygen threshold, 76:32
parasites of, 70:165

population study, 72:178
Shiner, blacktail, in Missouri, 82:247
in Texas, 82:214
Shiner, common, caught in weir, 76:165
distribution in Illinois, 59:254
downstream migrant, 81:290
effect of D.D.T., 75:55
effect of pollution, 82:160
effect of rotenone on, 68:271
food of, 60:254
brook trout, 60:66
lake trout, 76:312
northern pike, 80:69
rainbow, 76:309
in bass stream, 82:199
in hybrid ponds, 76:88
in Ontario, 81:113
in trout stream, 71:107
influence of temperature on spawning, 61:215
killed by rotenone, 72:270
parasites on, 64:179; 66:358; 70:165
population study, 72:178
predator on salmon, 78:131
propogation, 65:134
tagged, 68:258
Shiner, chub, in Texas waters, 82:214
Shiner, golden, catch, 78:68; 82:53
effect of arsenic on, 60:270
effect of copper sulfate on, 65:109
effect of D.D.T., 75:50
effect of pollution, 82:160
effect of oxygen concentrations on, 61:218
effect of pressure on, 61:219
effect of rotenone on, 68:271; 82:173
effect of vacuum, 70:470
flatworms in 69:273
food of, 59:184; 60:254; 62:117; 63:383; 65:57
bass, 61:85, 99
lake trout, 76:312
largemouth bass, 62:204
northern pike, 66:373; 80:75
forage fish in ponds, 59:90; 62:114; 63:114; 64:130; 76:47
growth of in bass ponds, 66:246
in bass ponds in Ontario, 60:39
in bass ponds, 66:244
in Canadian marsh, 70:422
in Florida waters, 82:15
in hybrid ponds, 75:92
in Louisiana, 82:256
in Michigan Lake, 75:201
in Missouri, 82:214
in North Carolina, 72:208
in Nova Scotian lakes, 67:181
in Ohio Stream, 66:317
in ponds, 69:257
in sewage disposal plant pool, 64:454
in terrace-water pond, 69:102
index minnow, 62:290
killed by fertilizer, 71:96
killed by rotenone, 70:82, 144; 72:270
killed by salt water, 64:84
life history, 65:140
oxygen threshold, 76:32
mortality, 76:27; 78:83
parasites on, 69:169; 70:165
population of, 65:298; 68:285; 72:178
propogation of, 61:132; 63:53; 64:94, 128; 65:132
toxicity threshold, 78:102
Shiner, lake, food of, 63:388
food of lake trout, 67:155
in British Columbia, 64:319
mortality of, Niagara River, 68:247
Shiner, lake emerald, effect of pollution on, 79:58
food of northern pike, 80:62
in Missouri, 82:247
Shiner, mimic, effect of pollution on, 82:160
effect of rotenone, 75:38
food of, 67:222
lake trout, 76:312
northern pike, 80:68
rainbow trout, 76:309
in Texas waters, 82:214
Shiner, plains, in Texas waters, 82:214
Shiner, red, effect of rotenone on, 82:173
in Texas waters, 82:214
Shiner, redfin, in bass stream, 82:199
Shiner, redside, smallfin, in Utah stream, 81:171, 250
Shiner, rosyface, effect of pollution on, 79:58; 82:160
food of northern pike, 80:69
Shiner, rosefin, effect of pollution, 82:160
Shiner, sand, effect of pollution on, 82:160
food of, 67:222
channel catfish, 75:116
Shiner, satinfin, in Virginia, 80:198
Shiner, silver, effect of pollution on, 82:160
Shiner, spotfin, effect of D.D.T., 75:49; 76:316
effect of pollution, 79:58; 82:160
food of channel catfish, 75:116
Shiner, spottail, food of Northern pike, 80:69
killed by rotenone, 80:37
in Virginia, 80:198
Ships, factory, beyond California 3-mile limit, 62:24
Shorefishes, tagging, 73:321
Shrimp, effect of temperature on, 62:110
hatchery food, 64:136; 65:384; 79:139
in Louisiana, 60:20
infected by protozoa, 73:276
Key to, 73:284
potential yield, 71:68
production of, 61:24; 62:336
quick freezing, 62:80
statistics, 62:111
Shrimp, brine, food of fishes, 63:129
Shrimp, brown-grooved, catch, 82:321
Shrimp, Caledonia, description of, 63:120
Shrimp, freshwater, collection of, 60:96
distribution, 60:89, 95
food of bluegill, 69:246
brook trout, 60:65, 82; 65:127; 71:221
channel catfish, 67:220
cutthroat trout, 63:200
grayling,69:246
rainbow trout, 63:255; 65:126
silver chub, 67:217
in bottom fauna, 75:328
in British stream, 66:384
in Fish Lake, Utah, 65:125
in Virginia stream, 63:252
lethal dosage of arsenic, 61:230
Shrimp, Hawaiian, in ponds, 74:267
Shrimp, Mexican, in mexican waters, 74:78
Shrimp, red, catch, 82:321
Shrimp, snapping, in Hawaiian ponds, 74:267
Shrimp, white, Texas catch of, 82:151
Shrimp bran, in trout diet, 62:127
Shrimp meal, in trout diet, 59:161, 164
Sialidae, 70:352; 72:56; 73:200; 81:120, 124
***Sialis*, 60:65, 192, 224; 64:73; 66:375; 71:109; 72:141; 81:123; 82:204-9**
***infumata*, 76:310**
***Sida*, 60:187; 67:219-21**
***crystallina*, 63:379, 380, 384, 385, 389, 390; 64:462; 65:63-8**

Signalosa, 73:275
petenensis, 79:147
Significance, test of, 70:417
Silica, in Ontario waters, 60:41
in Ponds, 66:112; 73:379
Silverside, brook, food of, 65:59; 67:218
food of bass, 70:198
in Florida lakes, 71:185
in Michigan Lake, 76:304
in Missouri Lake, 82:247
in Texas lake, 82:214
mortality of, 76:27
population study, 73:144
Silversides, rough, in Texas waters, 79:141
Simocephalus, 59:175, 259; 60:187; 64:152; 69:122; 70:327; 79:149; 80:69
exspinosus, 64:414
serrulatus, 65:63; 66:289
Simsonia, 75:53
Simuliidae, 60:65, 81, 105; 65:62, 64; 80:101, 104; 81:210
Simulium, 60:81; 64:243, 340; 66:375; 70:321; 73:202; 75:121; 77:172; 81:251
venustum, 71:220; 76:310; 77:172
Siphateles bicolor, 77:105
Siphons, effect on fish, 70:469
flowing constant, in disease treatment, 63:159
Siphlonurus, 75:120
alternatus, 70:243
Sium, 59:177
Size and age composition, bluegill, 75:207
green sunfish, 75:215
largemouth bass, 75:216
mud pike, 75:222
pumpkinseed, 75:209
rock bass, 75:219
yellow bullhead, 75:222
yellow perch, 75:219
Size, catfish in relation to food, 75:125
Size limits, lake Michigan, commercial fishes, 64:112
on catfish, in Louisiana, 60:19
on northern pike, 62:329
problem of, 60:19
walleye, 73:105
whitefish, 77:245
Size of fish, effect of electricity on, 61:182
Size, of oyster egg, 62:73
Size, poisoned fish, 75:207
Skates, in trawl fishery, 69:107
tagging, 73:321
zymogen granules in, 72:263
Skipjack, catch, 73:39
food of northern pike, 66:373
in Mexican waters, 74:72
name change, 81:326; 82:327
Slag, basic, in fertilizer, 70:336
Sleeper, Hawaiian, in ponds, 74:267
Sloughs, use of in fish culture, 59:106
Sludge worms, food of brook trout, 63:187
Slugs, food of brook trout, 63:194
Smelt, age composition, 78:179
annulus formation, 66:227
catch analysis, 78:178
catch per unit effort, 74:327
commercial value, 66:141
depth distribution, 62:332
dispersal in Great Lakes, 66:160
fecundity, 66:141
food of, 66:139; 78:179
burbot, 80:64
lake trout, 67:167
lawyer, 67:170
growth of, Green Bay, 66:140
in Alberta, 70:233
in Green Bay, Wisconsin, 66:139
in Lake Huron, 78:176
in Lake Ontario, 74:234
in New Brunswick, 60:118
in trout diet, 59:164
introduced into Great Lakes, 66:138
life history, 72:257
mortality, 74:310; 76:122
tagged, mortality from, 78:116
parasites of, 66:345
potential yields, 71:69
production, 74:326
Green Bay, 61:316
spawning run, 78:177
species interrelationship, 74:312
stocking of, Quebec, 64:432
tagged, 78:114
recaptured, 68:115
trapped in weir, 73:87; 76:160, 166
Smoking experiments, T.V.A. fish, 73:151
Snails, effect of rotenone on, 68:271; 69:153; 72:278, 283
food of bluegill, 69:246; 73:232
brook trout, 60:73; 63:194; 65:127
brown trout, 71:110
cutthroat trout, 63:200
grayling, 69:246
lawyer, 67:170; 69:195
rainbow trout, 63:255; 66:197
silver chub, 67:217
smelt, 66:140
trout, 65:130
host of parasites, 64:395
in stream bottom fauna, 64:241
in bottom fauna, 66:183; 75:328
in smallmouth bass stream, 68:325
production in Clinch River, 68:231
Snake, food of kingfisher, 76:111
marks left on fish, 63:230
predator on trout, 63:230; 64:129
effect of D.D.T. on, 75:58
in muskellunge protected area, 70:423
Snakefly, food of trout, 65:130
Snapper, in Mexican waters, 74:75
in India, 78:94
Snow, relation to winterkill, 76:27
Soaps, toxicity of, 79:59
Soda carbonate, control of disease in hatcheries, 62:114
Sodium, in Minnesota ponds, 66:111
Sodium arsenate, in algae control, 59:186
Sodium arsenite, in vegetation control, 60:270; 61:143; 62:159; 71:94; 76:178
method of application, 61:146
Sodium benzoate, in disease treatment, 65:95
Sodium carbonate, in ammunition plant waste, 73:45
Sodium chloride, effect on trout, 74:297
in trout spawning, 64.346
Sodium compounds, as waste in pulp manufacture, 79:58
lethal concentrations of, 79:59
Sodium hypochlorite, disinfectant in ponds, 63:161
Sodium metaarsenite, in weed killer, 61:145
Sodium nitrate, in fertilizer, 73:388
in vegetation control, 70:365
Sodium p-phenol-sulphonate, in disease treatment, 69:95
Sodium sulphite, in ammunition plant waste, 73:45
Sodium sulphocarbolate, in disease treatment, 63:172
Sodium thiosulphate, as disinfectant, 74:28
Sofia, in Brazil, 65:268
Solea vulgaris, 62:314
Sole, catch, 82:324
in India, 78:94
in Mexican waters, 67:258
Sole, dover, catch, 82:321
Sole, pointed nose, in trawl fishery, 69:107
Sole, round nosed, in trawl fishery, 69:107

Solenocera, 73:285
agassizii, 73:288
annectans, 73:287
atlantidis, 73:287
comatus, 73:287
crassicornis, 73:286
faxoni, 73:287
florea, 73:288
hextii, 73:286
koebeli, 73:286
melantho, 73:286
membranacea, 73:287
mutator, 73:288
necopina, 73:287
novae-zealandiae, 73:287
pectinatus, 73:286
rathbuni, 73:286
steindachneri, 73:286
vioscai, 73:287
Solid matter, in Minnesota ponds, 66:109
Solidago graminifolia, 59:177
Solids, content in lakes, 73:20
South Carolina, legislation, 59:28; 62:29; 64:38, 99; 65:37
Murry lake, impoundment fishery problem, 66:63
shrimp catch, 62:108
South Dakota, American Legion Lake water supply, 66:69
effect of drought on fish, 64.58
Enemy Swim Lake, reservoir fishery problem, 66:64
legislation, 59:28; 64:99; 65:39
pollution abatement, 62:359
Sowbugs, food of brook trout, 63:185
largemouth bass, 63:136
rainbow trout, 63:255
trout feeding experiment, 65:300
Soybean meal, in *Daphnia* culture, 64:135, 207
in pondfish fertilizing, 63:103; 69:258; 71:366; 72:99; 73:380
in trout diet, 59:126
Spain, eels in, 62:395
Spaniotoma, 73:202
Sparganium, 59:176; 64:465; 76:342
Sparganophilus, 71:187
Spartina, 59:176
Spatterdock, control in ponds, 70:363
in Cayuga Lake, New York, 69:205
in ponds, 73:282
in sewage plant pool, 64:446
Spawn, methods of taking, Lake Erie fishermen, 61:205
Spawning, advanced by hormone injection, 65:270
aids, in Michigan lakes, 63:409
areas, characteristics of, shad, 81:78
reserved for warm water fishes in Minnesota, 59:227
artificial, brook trout, 64:346
atlantic salmon, 64:211
bass, period in Louisiana, 59:215
in Ohio ponds, 62:161
in Texas, 59:216
black spotted trout, 59:169
bluntnose minnow, 65:139
boxes, in hatcheries, 63:402
of brook trout, 60:102, 106; 62:344; 64:333, 356, 458
chars, 72:86
chub, 65:143
chub sucker, 65:141
cisco, 67:241
common shiner, influence of temperature, 61:215
creek chub, 75:343
effect of mesh size on, 79:177
fallfish, 64:458
fathead minnow, 62:382
floating boxes, 64:143
golden shiner, 65:140
golden trout, 64:261
grayling, 62:177
influence of heredity on, 61:43
herring, 64:307
kiyi, 74:159
ling, 69:193
loss of weight at, 74:127
migration of northern pike, 71:153
mosquito fish, 61:209
muskellunge, 59:202
natural, efficienccy of, 74:200
oyster, 69:264
pickerel, 60:228; 66:372
pike, 60:231; 62:325; 66:372
pink salmon, 69:238
raceway preparation for, 75:337
rainbow trout, 61:47, 246; 64:167; 67:207
redbelly dace, 65:141
Reighard's chub, 72:132
removal of eggs as factor in Pyramid lake decline, 69:220
requirements of minnows, 64:94
season, cutthroat trout, 81:235, 243
kiyi, 74:143
Lake Huron, 64:112
Lake Michigan, 64:112
Lake Superior, 64:112
New York hatchery bass, 64:132
shad, 81:89
shad, 67:60
smallmouth bass, 60:54, 62; 67:99; 72:235
sockeye salmon, 60:262
spotted bass, 61:92; 62:186
squawfish, 65:145
steelhead trout, 64:332
stoneroller, 65:148
sturgeon, 60:226
trout, 62:239
tullibee, 60:223
weight loss, 77:236
whitefish, 60:219; 77:247
yellow perch, 60:230
Species, of bass, 61:86
fishes in prairie provinces, 60:217
Sphaeriidae, 60:319; 70:352; 73:232; 80:57, 65; 82:204-9
Sphaerium, 64:74, 278; 68:162; 70:321
stamineum, 75:54
Sphaerocystis, 60:254; 82:236
schroteri, 66:119; 82:235
Sphaerotilus, 64:452
natans, 66:388
Sphinctocystis elliptica, 66:119
librilis, 66:122
Sphingidae, 76:312
Sphyraena argentea, 67:258; 69:117; 74:74
barracuda, 74:267
ensis, 74:74
Spiders, food of brook trout, 60:65, 73; 63:185; 64:73
brown trout, 71:109
cutthroat trout, 63:199
grayling, 68:190; 69:246
horned dace, 64:73
rainbow trout, 63:255; 66:197; 76:305
sculpins, 66:374
in bottom fauna, 60:191
Spinitectus carolini, 63:223; 68:265; 70:168
gracilis, 69:271; 70:162, 166, 170
Spinal ossification, carp, 73:41
Spirodela polyrhiza, 64:371
Spirogyra, 59:174, 183; 60:159, 255; 61:231; 64:465; 69:123; 70:359; 73:377, 386, 388; 74:252, 340; 82:22, 287
crassa, 64:447

Spiroloculina, 74:255
Spirostomum ambiguum, 64:447
Spirostomus, 69:180
Spittlebugs, food of brook trout, 60:66
Spleen in trout diet, 59:126; 60:133; 61:61
  beef, hatchery food, 67:265
  hog, salmon food, 73:66
Spondylitis ossificans, 73:41
Sponge culture, 67:47
  fishing, 67:46
  freshwater, 81:120
Sponson bugs, food of smallmouth bass, 70:315
Spoonbill in T.V.A., 73:150
Sporozoa, parasite on gizzard shad, 61:202
Sport-fish problems, T.V.A., 73:137
Spot, food of striped bass, 67:81
  in Maryland, 66:403
  in Texas waters, 79:141
  potential yields, 71:67
Spring planting, effectiveness, 73:158
  vs. fall planting, 71:259
Spring-tails, food of brown trout, 71:107
  in bottom fauna, 60:191
Squalus acanthias, 72:264; 80:240
Squawfish, effect of low oxygen on, 69:198
  examination for furunculosis, 62:253
  in British Columbia, 64:319
  spawning, 65:145
Squeateague, internal tag used, 63:306
  spotted, in Texas waters, 79:143
Squid, as hatchery food, 64:157; 79:139
Stachys, 59:177
Stagnicola spicina, 63:203
Standard vs. total length, 71:270
Standardization, lengths and weights, 75:157
  of terms and procedures, 81:315
Standing crop of fishes, 72:187
Stannoxyl, in ulcer disease treatment, 68:147
Staphylinidae, 63:388; 69:251; 76:109
Starch, in trout diet, 59:126; 60:129, 132, 140; 61:61
Starfish, copper sulfate control, 62:78
  menace on shellfish, 62:76
Starvation, relation to temperature, 70:295
State and Federal cooperation in fishery investigations, 65:246
State and National relations, increase in fish, 66:392
  report, 71:36; 78:232; 79:271
State Fishery program, 76:13
Statistics, fishery, Atlantic Ocean, 71:65
  California, 62:94
  catch, 80:278
  collection of, 66:36
  commercial fishing, Tennessee, 68:240
  fish population, 82:48
  Great Lakes Fisheries, 63:33, 292; 65:73; 66:135; 71:118
  marine sport fishery, California, 63:332; 69:111
  on productivity of inland waters, 65:350
  sampling error, 66:422
  shrimp, 62:111
  United States fisheries, 71:61
Stauroneis, 66:119
  anceps, 64:447
Staurastrum, 61:211; 65:107; 66:119; 69:146; 70:350; 82:22
Steelhead trout, age at maturity, 70:217
  experiments in California, 64:248
  growth, 63:361
  predation on salmon, 64:318
Stenodus leucichthys, 77:86
Stenelmis, 71:221; 75:53
Stenonema, 75:53, 120
  canadense, 70:243, 245
  fuscum, 70:243
  rubrpmaculatum, 70:243
  tripunctatum, 69:252
  vicarium 70:243
Stenophylax guttifer, 70:243, 345, 346
Stentor, 64:138
  polymorphus, 64:447
Stephanodiscus, 75:328; 82:22
  niagrae, 70:224
Sterilization fish eggs, 71:316
Sternotherus odoratus, 70:205, 423; 75:58
Sterolepis gigas, 74:75
Stickleback, effect of insecticide on, 77:162, 168, 175
  effect of rotenone on, 69:149
  food of kingfisher, 76:105, 111
  in coastal lagoon, 69:180
  in New Brunswick, 60:118
  in Nova Scotian lakes, 67:181
  in Prince Edward Island, 60:101
Stickleback, brook, effect of rotenone on, 68:271
  food of northern pike, 80:69
  in Manitoba, 60:216; 75:330; 79:20
  in small lakes, 67:122
  in trout stream, 76:250, 259
  killed by rotenone, 70:82
  parasite of, 66:358
  population in stream, 68:285
  trapped in weir, 81:290
Stickleback, five-spined, food of brook trout, 60:66
  in trout waters, 69:258
Stickleback, ninespined, effect of copper sulfate on, 65:109
  food of brook trout, 60:66
    lake trout, 67:167; 76:312
    lawyer, 67:170
    rainbow trout, 76:309
  in prairie provinces, 60:216
  population of, 65:298
Stickleback, threespine, toxicity threshold, 78:103
Sticks, in cutthroat trout stomach, 63:199
Stinkbugs, food of brook trout, 60:66
  rainbow trout, 66:197
Stizostedion, 77:180; 80:60
  canadense, 60:229; 63:348; 71:203; 73:39, 105, 147; 75:65, 306; 77:13, 120, 197; 79:22, 30, 169, 188
  vitreum, 59:110; 60:228, 258; 62:333; 63:341; 64:392; 65:212; 66:143, 403; 67:241; 68:163, 244, 356; 70:384, 407, 469; 71:112, 118, 272, 286; 72:187; 73:19, 29, 87, 90, 133, 243, 261; 75:20, 36, 65, 116, 175, 282, 306, 332; 76:165, 322; 77:13, 32, 86, 120, 197; 78:100, 163; 79:20, 30, 167, 189, 196; 80:37, 50, 53, 64, 198, 307; 81:179, 325; 82:34, 106, 160, 251
  vitreum glaucum, 63:341; 74:234; 75:308; 77:197; 79:139
Stock, brood, selection of, 75:338
Stocking, alewives in Maine, 73:413
  artificial lakes, 72:204
  bass, 80:218
  bluegill, 80:218, 232
    fry, survival, 76:190
  brook trout, 70:225, 410
    from air, 65:277
  daphnia in ponds, 64:209
  different ratios, bass-bluegill, 77:141
  effect on angling for wild trout, 82:265
  effect on population, 80:207
  excess, 72:166
  eyed eggs, 64:379
  faults, 71:22
  from airplane, 68:353
  fry vs. fingerlings, 71:354
  hybrid sunfish, 75:84; 79:112

lake trout, 75:332
lakes with trout, 69:162
largemouth bass, 80:232
legal sized fish, 68:196; 71:355
legal trout, 70:446; 72:165
Maryland streams, 60:260
National Forest streams, 65:236
need for better practice, 63:78
policy, 62:256; 71:343
for Ohio, 62:258
for Sacandaga Reservoir, 61:141
program for Great Smoky Mountain National Park, 68:91
rainbow trout, 73:117
Quebec, 62:197
rates for hatchery ponds, Ohio, 61:108
for ponds, 80:210, 218
results, brook trout, 72:92; 81:43
rainbow trout, 72:92
trout, 72:159; 73:158
streams, 69:159
salmon, size at, 78:190
salmonids in Argentina, 69:279
seasonal, 72:160
seven year study on reservoir, 68:221
size of trout, Maryland, 61:80
smelt, Quebec, 64:432
spring vs. fall, 68:83; 71:259; 74:35
steelhead, 70:212
use of oxygen in transporting, 70:149
value of, black crappie, 82:253
lake trout, 82:191
Stomach examination, cutthroat trout, 81:245
trout, 81:213
Utah sculpin, 81:249
Stones, in trout stomach, 63:199
Stonecats, environment of, 59:253
in Montana, 80:100
yellow, aged by vertebrae, 80:175
Stonefly, effect of rotenone on, 68:271
food of brook trout, 60:65, 73; 63:186; 64:73; 65:127, 153; 71:221
brown trout, 71:107
cutthroat trout, 63:199
ling, 69:195
rainbow trout, 64:342
sculpins, 66:375
smallmouth bass, 70:317
trout, 65:131
in bottom fauna, 66:183; 72:36, 57; 73:200; 81:210
in swift stream, 61:50
production in trout stream, 68:232
Stoneroller, effect of pollution on, 82:160
in Ohio stream, 66:317
population, 76:208; 82:193
propogation, 61:132
Storms, smelt mortality cause, 74:317
Strap tag, 73:324, 336
Stratification, temperature, 71:84
Stratiomyia, 75:121
Stratiomyiidae, 69:247; 76:109
Stream bottom fauna, seasonal study, 69:178
changing Clinch River into trout stream, 68:228
clean, value of, 64:87
comparison of smallmouth bass, 68:322
condition of Missouri, 61:119
effect of dams on, 64:457
estimating fish populations in, 69:231
factors influencing fish production, 67:246
food production, 67:246
food grade determination, 68:336
growth of trout in southwest, 67:250
improvement, clean stream campaign, 62:355
cost of, 61:51
devices, description of, 61:53
Iowa, 65:322
Michigan, 60:185; 61:48; 63:404; 67:107; 75:270
National Forests, 65:236
New York, 65:316
physical changes produced by, 66:180
purpose and value of, 64:63
pulp and paper industry, 77:262
shelters, 75:270
Spring creek, Penna., 68:359
Tennessee, 68:243
value of, 63:77; 66:177
willow planting technique, 59:21
management, National Forests, 65:234; 72:150
trout, 68:76
measurement of pollution in, 65:240
measuring area of section, 69:232
migration in, 68:256
Ohio, comparative production, 66:83
parasites of bass, in Ohio, 63:220
pollution from salt from oil field, 64:81
productivity of rainbow trout, Virginia, 63:251
quantitative bottom food studies, 64:238
southwest, alkalinity of, 67:250
stocking, Maryland, 60:260
survey, 60:184; 71:337
trout, bottom fauna, 64:71
trout management, 64:68
maintenance of, Minnesota, 59:231
Strigeidae, 59:200; 63:221
Striphitus rugosus, 64:446
Stripping technique, brown trout, 77:69
Stromateus, 78:94
Strongylura, 74:77
Stylaria, 59:175
Stylonichia, 61:230
Stylurus, 76:310
Students, Foreign, training of, 77:309
Stunted fish populations, management, 71:102
Sturgeon, aged by pectoral fin, 80:175
catch of, 60:225; 71:203; 80:30
depletion, 73:105, 77:16
food of, 60:227
growth rate, 60:227
in Lake Winnepeg, 79:22
introduced into Canada, 64:368
spawning of, 60:226
tag, 73:324, 338
tagging experiments, 69:63
Subsidy, for commercial fisheries, 71:63
Suckers, catch of, 60:231; 63:301; 65:221; 76:156; 79:21, 128, 135, 169
disease in, 77:103
examined for furunculosis, 62:253
food of, 60:231
kingfisher, 76:105
merganser, 66:336
trout, 59:150
gillnet catches, 73:29
in Convict Creek, Calif., 81:203
in new lake, 71:348
in Prince Edward Island, 60:118
in reservoir, 68:221
in trout diet, 59:164
migration, 70:61
mortality, 75:175
parasite in, 64:390, 395
population, 81:260
study, 72:178
potential yields, 71:69
predation on trout eggs, 59:266; 62:246
production of, Ohio reservoir, 66:79
relation to freshets, 75:257

relation to salmon and trout, 65:152
respiration of, 59:242
tagged returns, 63:326
Sucker, black, removal, 70:384
Sucker, blue, catch, 80:38
Sucker, Bonneville Mountain, in Lake Mead, 80:89
Sucker, flannelmouth, in Lake Mead, 80:87
Sucker, hog, catch, 72:214
effect of D.D.T., 75:50, 55; 76:315
effect of pollution, 82:160
environment of, 59:253
in bass stream, 68:324, 331
in Virginia, 80:198
mortality, 75:175
parasite of, 66:358
tagged, 66:317; 68:258
Sucker, humpback, Lake Mead, 80:86
name change, 81:325
Sucker, longnose, age composition, 78:24
age and growth, 78:20
catch, 75:331; 77:86
caught in weir, 73:87
depth distribution, 62:332
effect of pollution on, 63:71
food of, 78:22
gillnet catch, 73:29
growth, 80:93
in British Columbia, 64:319
in Lake Ontario, 74:234
in Lake of the Woods, 77:13
in Montana, 81:260
in Ontario lakes, 81:113, 126
parasites of, 70:163
reduction in population, 78:13
spawning, 78:21
Sucker, redhorse, catch, 72:214
effect of pollution, 73:47
food of, 67:218
parasites of, Ohio, 66:358
tagged, 66:317; 68:258
Sucker, rosyside, egg eater, 69:176
Sucker, spotted, catch, 73:39, 76
in Missouri lake, 82:245, 256
in Oklahoma, 80:12
population, 80:37
Sucker, mountain, in Lake Mead, 80:87
Sucker, white (common), catch, 75:330; 77:86; 78:67
caught in weir, 73:76; 81:290
caught in trap, 76:165, 175
collected by shocker, 69:212; 81:66
depth distribution, 62:332
diurnal activity, 68:211
effect of copper sulfate on, 65:109
effect of D.D.T., 75:50; 76:316
effect of low oxygen on, 69:198
effect of pollution, 82:160
food of, 60:253
brook trout, 60:66
brown trout, 71:107
lake trout, 61:187
walleye, 61:187
growth, 79:191; 80:94
in bass stream, 68:324; 82:193, 201
in British Columbia, 64:319
in Lake Ontario, 74:234
in Lake of the Woods, 77:18
in Marsh, 70:422
in Minnesota, 68:163; 76:206, 209
in Montana, 81:263
stream, 80:100
in New York reservoir, 61:140
in Nova Scotian lakes, 67:181
in Ontario lakes, 81:113
in Prairie province lakes, 60:216
in small lakes, 67:122
in trout stream, 81:227
killed by rotenone, 68:271; 69:149; 70:82, 144, 352; 75:205
migration, 70:393
mortality, 71:112; 78:83
parasites of, 66:358; 70:163; 71:287
population of, 65:298; 68:285; 72:178, 190; 78:165; 81:10
predation on lake trout eggs, 61:183
removal, 70:384
stocked in lake, 78:66
tagged, 66:317; 68:258
Sulfadiazine, 78:181, 213; 80:240, 247
Sulfa drugs, treatment of furunculosis, 75:186
Sulfaguanidine, 78:117; 80:240, 247
Sulfamerazine, 76:82; 77:93; 78:117, 125, 181; 80:240, 247; 81:101
Sulfamethazine, 78:181; 80:240, 246
Sulfanilamide, 68:157; 78:181; 80:240, 245
Sulfaquinoxaline, 80:240, 246
Sulfathalidine, 80:240, 246
Sulfathiazole, 78:181; 80:240, 246
Sulfates, in ponds, 66:111; 73:377
relation to productivity, 76:326
Sulfate, iron, in natural ponds, 73:257
Sulfides, in ponds, 66:111
Sulfuric acid, in plant wastes, 73:45
Sulfonamide, 78:117, 181; 80:240
Sunfish, capture in seines, 70:387
catch, 66:325; 71:203; 72:204; 80:14
collected by shocker, 77:56
disease in, 74:24
effect of electricity on, 61:178
effect of pollution on, 63:71
eggs per female, 71:350
environment of, 59:253
food of kingfisher, 76:105
growth, 59:210; 75:215
host for glochidia of muckets, 59:218
hybrid, 75:84, 205, 215; 79:112
in Florida lakes, 71:185
in reservoir, 61:140; 68:221
killed by rotenone, 70:82
management, 72:204
migration, 70:394
parasites of, 70:169
population study, 72:178; 78:165, 171; 80:39
size and age composition, 75:215
survival, 72:63
year classes, 75:224
yield per acre, 73:146
Sunfish, blackspotted, parasites of, 68:267
Sunfish, bluespotted, parasites of, 68:267
Sunfish, green, age and growth, 75:215
catch, 73:39; 78:66; 80:15, 31; 82:251
collected by shocker, 77:57
D.D.T., treatment, 76:318
disease in, 80:146
effect of pollution, 73:47; 82:160
food of rainbow trout, 76:309
hybrid, 75:88, 95; 79:113
in bass stream, 82:193
in bluegill pond, 76:193
in Illinois lake, 80:235
in Lake Mead, 80:91
in Louisiana, 82:256
in Ohio stream, 66:317
in smallmouth bass stream, 68:331
in Virginia, 80:198
introduced into Nevada, 73:186
introduced into Oregon, 69:241
killed by lack of oxygen, 64:374
killed by rotenone, 72:270; 75:140, 205; 82:173
parasites of, 66:358

population estimates, 82:61
population study, 72:178; 82:48, 247
range of pH tolerance, 61:217
standing crop, 82:62
stocked, 78:66
tagged, 68:258
Sunfish, longear, catch, 72:214; 73:39; 78:67; 80:12, 31
collected by shocker, 77:57
disease in, 80:146
hybrid, 79:122
in bass stream, 82:195
in bluegill pond, 76:202
in Florida waters, 78:39
in Texas waters, 82:214
killed by rotenone, 82:173
parasites of, 68:268
population, 82:247
Sunfish, orangespotted, hybrid, 79:122
in Oklahoma, 80:12
killed by rotenone, 82:173
population, 82:248
range of pH tolerance, 61:217
Sunfish, redear, catch, 73:39; 80:26
hatchery production, 73:373
hybrid, 75:85; 79:112
in Florida lakes, 78:39; 79:157; 82:15
in Texas, 80:12, 211
killed by rotenone, 82:173
mortality rate, 82:64
population estimate, 82:53
propogation of, 61:116
standing crop, 82:62
stocked in pond, 80:221
in T.V.A. reservoir, 71:349
Sunfish, redbelly, in bass stream, 68:331
effect of D.D.T. on, 75:50
Sunfish, spotted, in Florida, 78:39; 82:13
Sunfish, yellowbellied, D.D.T. treatment, 76:318
in Florida lakes, 78:39
in Texas lakes, 80:211
in Virginia, 80:197
Sunlight, effect on oxygen content in lakes, 62:280
interrelationships between plants and fish, 62:278
Superphosphate, in pond fertilizing, 63:104; 64:129; 68:126; 69:258; 70:336, 365; 71:342; 72:97; 73:383; 74:342
Supersonic vibrations, re smelt mortality, 74:317
Surber sampler, 72:53; 73:198
Surirella, 65:107; 74:254
Survey, biological and limnological, Great Lakes, 59:69
biological, Lake Erie, 61:199
conducted in Ontario, 60:34
fish, 71:326
fishes of Champaign county, Illinois, 59:250
Fish Lake, Utah, 65:124
Kamloops lakes, 62:144
lakes, 71:184, 333, 337
Michigan lakes, 66:128; 67:105, 120
lakes and streams, 60:184; 68:240
National Forest streams, 65:234
stream, 71:337
trends in state fishery programs, 76:13
trout waters of Ontario, 59:256
Survival, bass fry in ponds, 64:130
Blackspotted trout eggs, 60:166
bluegills, 72:63
bluegill fry plantings, 76:190
bluntnose minnow, 67:128
brook trout, 67:127, 224; 71:257
eggs, 60:104
in tarred and painted troughs, 60:124
over winter, 66:207
brown trout, 73:209; 75:147
cutthroat trout, 74:286
finclipped fingerlings, 80:266
fingerling planting, sockeye salmon, 61:126
forage fish, 67:127
fry to adults, 73:23
fry, sockeye salmon from artificial propogation, 61:123
from natural propogation, 61:122
furunculosis treatment, 76:87, 92
hatchery fish, 70:255
trout, 74:40; 81:35, 43
lake trout, Lake Huron, 82:186
largemouth bass, 72:63
to fingerlings, 60:51
menona killifish, 67:128
percentage of, 72:47
ratio, 73:146
rates, little-exploited populations, 77:114
relation to temperature, 70:399
re smelt mortality, 74:319
salmonids, 82:147
smallmouth bass, 64:147; 75:43
stocked hybrids, 79:115
tagged trout, 73:170
transplants, 73:341
treatment for furunculosis, 75:189
trout eggs under carbon dioxide, 65:199
trout in streams, 77:26
trout after planting, 69:162; 70:407, 446; 73:108, 117
yield, legal sized trout, 82:265
Susceptibility, to ulcer disease, 70:373
Swordfish, in Mexican waters, 67:258; 74:76
potential yield, 71:65
tagging, 73:321
taxonomy, 80:115
Sympetrum, 60:65
Symposium on fish and wildlife, flood control and navigation, 77:253
Synchaeta, 66:123; 73:244
Syncytium, 72:265
Synedra, 59:97; 65:118; 82:22
tenuissima, 66:114
ulna, 66:119
Synura, 69:145; 78:135
Syrphidae, 60:81

T

Tabanidae, 60:66, 81; 71:170
Tabanus, 60:196; 70:182; 75:121
Tabellaria, 69:145; 77:84; 78:135, 139; 82:22
fenestrata, 63:396; 65:107
flocculosa, 65:107
Tachinidae, 69:251
Tadpole, food of brown trout, 77:75
pike, 80:67
smallmouth bass, 70:326
killed by rotenone, 72:283
Taeniopteryx, 63:186
Tag, effect on fishes, 63:319
effect on walleye, 81:193; 82:39
loss of, 81:159
method of recovery, 73:344
opercular, celluloid, 78:114
Petersen, 81:35, 69, 71
recoveries, lake trout, 82:74
mullet, 81:69
walleye, 81:183
returns, 80:2, 47
in Ohio, 63:326; 67:211
selection of, 73:342
streamer-type, application of, 82:42
types of, 73:323

Tagged fish, in Ohio, 61:207
recovery, in Lake Michigan, 69:65
Tagging, atlantic salmon, 69:290; 70:126
bass, 79:156
bibliography on, 73:252
black crappie, 80:3
brook trout, 70:253, 408, 446
brown trout, 70:446
chum salmon, 62:92
coho salmon, 62:91
croaker, 70:478
cutthroat, 81:35, 235, 239
experiment, Lake Michigan, 69:63
fish, 71:228, 346; 72:208; 73:158, 320; 74:360
internal, 63:306
king salmon, 62:90
lake trout, 82:68
largemouth bass, 80:7, 203
lobster, 75.267
methods, 70:211, 253; 73:347; 77:35
migration studies, 68:257
mortality, 70:463; 79:163; 80:2, 4
mullet, 81:69
pacific salmon, 62:88
pink salmon, 62:92
rainbow trout, 70:446
sea lamprey, 82:123
shad and rock, Chesapeake Bay, 68:364
smallmouth bass, 62:381; 80:203
sockeye salmon, 60:264; 62:92
spotted bass, 80:6, 203
steelhead trout, 70:211
stream fishes in Ohio, 66:316
striped bass, 67:68
trout, 81:262
results, Connecticut, 63:308
walleye, 68:164; 80:203; 81:179; 82:37
white bass, 80:3
white crappie, 80:3, 203
yellow bass, 80:6
yellow perch, 81:150
Tail rot, in hatchery, 64:138
resembles columnaris, 73:34
Tanks, circular hatchery, 70:430
Tanypinae, 60:224; 63:382, 390; 65:63-7
Tanypodinae, 69:247; 73:202
***Tanypus*, 60:81; 65:64, 66**
***stellatus*, 76:310**
***Tanytarsus*, 60:81; 65:64, 66; 72:137-44; 81:251**
***jucundus*, 76:310**
Tapeworms, food of fishes, 65:63
human, 70:483
in bass fingerlings, 63:114
in brook trout, 66:344
in fishes, 64:390; 68:265
in pike and pickerel, 69:268
in tullibee, 73:132
in whitefish, 75:330
Tapeworm, bass, in Ohio ponds, 66:364
Tapeworm, broad fish, life history, 64:391
***Tarpon atlanticus*, 74:75**
Tarpon, in Texas waters, 79:139
Tautog, parasite in, 64:390
Taxonomy of charrs, 72:79
desirability of international approach, 80:110
marine fish, 80:110
Technology, relation to fisheries, 70:72
Temperature, decline of atlantic salmon, 70:123
effect of, 73:23, 34
on atlantic salmon migration, 64:351
bass spawning, 60:54
brook trout, 62:119
feeding, 60:85
brown trout eggs, 62:123
distribution of *Gammarus*, 60:92
fish culture, 62:119
fisheries, 64:385
food consumption of largemouth bass, 62:202
growth rate, 59:213; 81:134
hatching of atlantic salmon, 62:216
hatching of brook trout eggs, 62:142
Hocking River plankton, 61:204
injestion of bacteria by clam, 60:269
metabolism, 63:215
oxygen consumption, 63:211
oyster, 69:264
rainbow trout, 70:290
migration, 63:81
respiration, 59:239; 62:121
rocking, 62:125
salmon eggs, 69:138
shrimp, 62:110
sockeye salmon, 70:339
spawning salmon runs, 64:229
trout production, 63:204
vertebrae counts, 63:288
whitefish eggs fertility, 63:144
and fry production, 62:240
influence on spawning of common shiner, 61:215
in Lake Trout culture, 63:66
Lake Michigan, 74:151
of fish, 63:216
New York lakes and ponds, 64:190
Norris Reservoir, 68:64
Nova Scotia coastal waters, 65:280
Ontario waters, 60:41
Quebec lakes, 62:197
reduction in stream improvement, 75: 278
re smelt mortality, 74:318
rearing pond, 71:362
relation to death rate, 74:355
depth distribution, 76:65
to egg survival, 75:43
growing season, 70:185
loss in weight, 70:294
mortality, 70:68, 400
survival, 70:399
ulcer disease, 70:376
seasonal fluctuations, 70:392
summer, Louisiana waters, 59:213
tolerance of brown trout, 61:245
rainbow trout, 61:245
trout ponds, Ontario, 59:262
trout stream, 64:69
Tempering, brook trout, 70:397
Tench, in Israel, 81:219
in Nevada, 73:190
introduced into Canada, 64:368
killed by salt water, 64:83
Tenebrionidae, 69:251
Tennessee, Division of Game and Fish, 71:336
fisheries program, 68:240
legislation, 59:25; 62:29; 64:99; 70:28
research in, 63:29
reorganization of Dept. of Game and Fish, 65:37
River, bottom fauna, 72:52
impoundment, 72:103; 73:138
streams, geological formations, 74:223
water analysis, 74:223
Ten-pounder, Hawaiian, 74:250
Tenthredinidae, 69:247
Terminology, standardization, 75:157; 81: 315
Terns, hatchery predator, 64:129; 69:123
***Testudinella patina*, 66:124**
***Tetracotyle*, 70:163, 170**
***Tetragoneuria*, 68:191; 69:247; 79:149**
***simulans*, 69:254; 76:310**

Tetraonchus momenteron, 69:271
Tetrodon hispidis, 74:267
Texas, first hatchery in, 61:174
gulf coast menhaden utilization, 79:137
legislation, 59:28; 64:99
salinity of rivers, 64:82
shrimp catch, 62:108
stream pollution, 64.81
Texture, cooked wild vs. reared brook trout, 75:183
Thalmita integra, 74:273
Thenus orientalis, 78:94
Thermocline, relation to rotenone, 70:82
Thiamin, requirement of trout, 76:41
vitamin in fish, 77:152
Thiamin chloride, deficiency in trout, 72:30
injections, 72:30
Thomisidae, 69:247
Thripidae, 65:62; 67:221
Thrips, food of *Gambusia*, 74:272
spottail minnow, 67:221
Thuja occidentalis, 72:37
Thunnus, 80:113
orientalis, 80:115
saliens, 80:111
secundodorsalis, 80:111, 115
thynnus, 67:258; 74:72; 80:111
Thysanoptera, 65:64; 67:221; 74:272; 82:26
Thymallidae, 60:217
Thymallus, 62:250
montanus, 68:188; 69:244; 75:37
signifer, 60:216; 62:378; 73:187; 77:86; 79:24
thymallus, 68:189
tricolor, 68:188
Tibicen auletes, 75:120
Tiburon, in Mexican waters, 74:73
Tigoma atraria, 65:127
Tilapia, 81:219
Time and Place Committee, report, see Committee
Tinca tinca, 62:314; 64:368; 73:190
vulgaris, 64:83
Tipulidae, 60:66, 81; 66:197; 67:216; 71:220; 73:202; 80:61, 65, 102, 105; 81:120
Tipula, 60:81; 66:375; 68:271; 69:153; 71:225
abdominalis, 76:310
Tissue levels, sulfamerazine, 81:101
sulfonamides, 80:240
Tivela stultorum, 78:80
TNT, 73:45
Toad, northwestern, caught in trap, 82:148
Tolerance, fish to turbidity, 75:316
Toleration threshold, oxygen, 76:32
Toluene, in ammunition plant waste, 73:45
Tomcod, in hatchery diet, 64:157
nutritive value, 64:436
Topminnow, food of bass, Cuba, 66:367
food of kingfisher, 76:105
propogation, 61:132
Topminnow, blackstripe, in hybrid sunfish pond, 75:88
killed by rotenone, 80:37
mortality, 76:27
name approved, 81:325
Topminnow, golden, food of, 82:29
of spotted gar, 82:23
Topminnow, starhead, name change, 81:326
Torrenticola, 67:221
Torula utilis, 79:105
Totoaba, in Mexican waters, 74:73
Toxicity, ammunition plant wastes, 73:45
apparatus for evaluation, 75:228
copper sulfate, 69:141
crude oil, 65:326
D.D.T., with different application, 75:61
to brown trout, 75:59
to fish, 76:315
of disease treatments, 68:179
experiments on river water, 75:179
insecticides to fish, 77:164
lasting effect of rotenone, 69:154
linseed meal in trout diet, 60:137; 63:167
to fish, 61:77
respiratory effects as indiction of, 59:238
rotenone, 68:275; 69:141
test of waste for, 79:58
thresholds, chlorides, 78:96
cyanide, 78:192
goldfish, 78:100
walleye, 78:100
whitefish, 78:100
Toxotrema venustus, 64:394
Trachelomonas, 66:114
volvocina, 66:119
Trachinotus, 74:77
carolinus, 79:139
Trachypenaeopsis mobilispinis, 73:312
richtersii, 73:312
Trachypenaeus, 73:311, 314
Trachysalambria asper, 73:314
brevisuturae, 73:314
byrdi, 73:314
constructus, 73:314
curvirostris, 73:314
granulosus, 73:314
similis, 73:314
Trahira, in Brazil, 65:268
Transmission, ulcer disease, 70:374
Transplants, growth and survival, 73:341
Transportation, use of oxygen, 70:149
Trap, for largemouth fry and fingerlings, 59:118
Trap nets, blue pike in, 62:103
deep water, description of, 62:64
in Great Lakes, 62:64
depletion of whitefish, 63:34
legislation on, 62:100
mesh size, Lake Erie, 62:100
sauger in, 62:103
sheepshead in, 62:103
smelt in, 72:257
striped bass in, 62:103
walleye in, 62:103
yellow perch in, 62:103
Traps, plankton, 62:293
salmon, 75:97
wire, 81:163
Wolf, 80:41
Trawler, introduction of, 62:57
Trawling, California Fishery, 69:106
Otter, conservation of immature fish, 62:57
design, 62:61
production of haddock, 62:59
Treatment, of bacterial gill disease, 65:86
calculation of amounts, 68:181
cyclochaetosis in brook trout, 67:230
hatchery fish, with potassium permanganate, 65:88
ulcer disease, 68:146
water with copper sulfate, 65:117
Treaties, reports on, 78:223
Treaty, Fishery, 77:310, 329, 332
Pelagic Sealing, 63:20; 64:21; 65:22; 71:36
Sockeye Salmon, 59:32; 66:25

Trematodes, food of brown trout, 60:255
in bass, 63:221
in brook trout, 66:344
in minnows, 69:283
in pike and pickerel, 69:268
Trepobates, 70:230
Triaenodes injusta, 76:310
tarda, 76:310
Triaenophorus, 75:330; 77:17; 79:22, 249
crassus, 79:27; 81:94, 98
robustus, 70:483; 73:132
tricuspidatus, 64:396
Triarthra, 59:100
Trichlorobenzene, weed control, 76:179
Trichlorethylene, weed control, 76:181
Trichiurus lepturus, 79:141
Trichocera cristata, 66:124
rattus, 66:124
tetractis, 66:124
Trichodina, 67:228; 69:95; 70:162; 72:197; 74:24
renicola, 69:269
Trichophrya microptcri, 72:234
Trichoptera, 59:175, 258; 60:65, 105, 192, 219; 61:204; 63:194, 199, 255, 382, 389; 65:153; 66:183, 197, 254; 67:216, 220; 68:190, 232; 69:195, 207, 246; 71:107, 170, 278; 72:56, 141, 278, 283; 73:200, 233, 246; 76:109, 112, 257; 80:52, 61, 65, 79, 102, 105; 81: 212, 214, 235, 245, 249, 251, 253; 82:16, 205, 209
Tricorythodes, 73:202
allectus, 69:250
Tricorythus, 60:81; 70:320, 322
Triganodistomum simeri, 70:163
Tritigonia verrucosa, 64:446
Triglopsis thompsonii, 67:167; 74:234
Triton, 78:94
Triturus, 82:148
viridescens, 64:71, 425
Troglotrema salmincola, 64:394
Troughs, effect of covering, 72:145
Trout, beaver management, Michigan, 65:253
calcium content, 61:74
catch in North Carolina, 79:252
cause of whitespot disease, 63:245
changes in weight under diet, 68:316
changing Clinch River into trout stream, 68:228
chemical characteristics of, 68:316
chemical composition of, 61:58
chloride threshold, 78:108
competition from sculpins, 66:380
creel census, 70:251
in New Hampshire, 66:314
culture, 71:361
Quebec, 62:224
statistics, 76:14
diet, 59:160; 61:60; 62:127, 189; 64:155; 68:95
disease of gills, 66:369
distributed in New Jersey, 62:127
effects of beaver dam, 70:237
effects of carbon dioxide on eggs, 65:194
cresol, 70:304
food on color, 60:43
high oxygen concentration on, 62:270
sodium chloride on 74:297
eggs, temperature effect on, 64:281
food of brook trout, 63:194
electrical census method, 70:407
evaluation of culture, 69:85
factor H, in nutrition, 66:291
fat in body, 61:74
feeding experiment with natural food, 65:300
feeding habits, 70:230
feeding in California hatcheries, 65:305
fingerling, diet of, 59:161
food habits on planted, 62:134
plantings from circular pools, 62:133
Fish Lake, Utah, production, 65:122
fishery, 75:19
food habits, in Colorado, 65:381
food of kingfisher, 76:105
food of, Klamath river watershed, 65: 129
food of trout, 59:150
fungus disease, 70:267
growth rate, 61:62, 68, 72; 64:197; 67: 250; 68:105; 70:225, 230; 79:90; 80: 251
harvest, in Vermont test stream, 65:224
hatchery, 78:211
disease in, 65:76
disinfection of, 74:26
forager in, 64:339
maintenance, 74:26
production of, 61:20
influence of heredity on spawning, 61:43
in Fish Lake Utah, 65:126
killed by rotenone, 70:82
length of frequency, 81:232
loss in hatchery, 70:280
Maligne River system, 70:221
management of water, 69:158
migration, 70:254; 74:44
mortality after hooking, 63:238
in hatchery, 67:268
on various diets, 61:63; 68:109
movement, 64:344; 81:269
new circular hatchery tank, 70:430
nutritional requirements of, 61:58
oxygen consumption, 62:123
palatability of wild and reared compared, 75:181
physical characteristics of, 68:316
planted diseased trout, 70:272
planted in parks, 66:395
planting of eyed eggs, 64:379
planting, 74:35; 75:323
phosphorus content, 61:74
population depletion, 74:166
estimates, 81:229, 233, 260, 264
predation by merganser, 66:335
on trout eggs, 62:246
private waters, 70:410
production, effect of temperature, 63:204
in New Jersey Hatchery, 62:126
propogation of, Maryland, 61:80
in Michigan, 59:234
protein catabolism, 70:290
requirement, 63:338
rearing, in limited water supply, 61:39
recovery of marked, 75:36
relation to freshets, 75:259
resistance to ulcer disease, 70:377
results, spawning, 74:281
stocking, 69:160; 70:249, 446
riboflavin and pantothenic acid, 74:81
San Gorgonia, 67:141
scales, measuring of, 74:59
selective breeding, 62:129
size for stocking, Marland, 61:80
spawning habits, 62:239
spawn taking, Oregon, 66:394
stocking of, Maryland, 60:260
stream management objectives, 68:76 262
summary of tests on hatchery food, 67: 262
tagging, results in Connecticut, 63:308
tissue levels, sulfonamides, 80:240

treated with potassium permanganate, 64:304
treatment of furunculosis, 75:186
ulcer disease, 64:252; 70:369
vitamin B requirement, 76:34
weight per cubic foot of water, 65:372
yield, 81:231
yield per acre, 70:411
Trout, brook, age, 64:74; 78:20
at planting, 61:40
artificial spawning, 64:346
biotin requirement, 77:152
blackfly in diet, 77:172
breeding of, 60:114
brood stock, 62:141
calcium requirement, 65:359
catarrhal enteritis, 70:297
caught in weir, 76:165
change in food with size, 59:266
collected by shocker, 69:212; 70:408; 81:66
costiasis in, 65:332
cost of rearing, 71:258; 80:151
depletion, 74:166
depth distribution, 62:332
diseases of, 60:110
distribution, Minnesota, 61:240
effect of copper sulfate on, 65:109
deflectors on angling, 76:248
heredity, 64:203
oxygen concentrations on, 61:218
pressure on, 61:221
temperature on, 62:119
winter on, 81:203
eggs, collected, Quebec, 64:424
effect of temperature, 62:142
loss in hatchery, 62:141
purchased for Minnesota, 59:229
rotenone on, 69:148; 70:354
experimental stocking, legal sized fish, 68:196
exploitation of, 81:224
fat used by, 65:361
feeding habits, 71:219; 81:127
fertilization of eggs, 62:345
fingerlings, octomitiasis in, 59:195
fish culture, in Mexico, 67:94
food of, 59:146, 259, 262; 60:64, 73 103, 182; 64:73, 340; 65:127; 66:344; 78:20
food conversion, 65:366
food value, animal and plant by-products, 59:126
fry, feeding habits, 62:142
mortality, 60:172
fungus in 63:242
furunculosis, 61:193; 76:82; 78:181
Great Smoky Mountains National Park, 68:89
growth rate, 59:126; 62:347; 64:74, 156; 65:366; 66:203; 67:126; 72:44; 80:100, 251; 81:22
hatchery diet, 65:161; 68:96
in Alberta, 78:17, 27
in British Isles, 66:385
in fertilized lake, Michigan, 78:147
in Manitoba, 62:379; 79:24
in Maryland, 66:403
in Montana, 81:263
in New Brunswick, 75:165
in Nova Scotian lake, 67:181
in Ontario, 75:20; 78:131; 81:113
in Prairie provinces, 60:232
in private waters, 70:410
in Sacandaga reservoir, 61:140
in small lakes, 67:122
in Utah, 81:17, 239, 250
intestinal fungisitosis, 63:241
introduced into Argentina, 68:279
in Oregon, 69:241
into Pyramid lake, 69:220
killed by rotenone, 70:82
life history, 60:101-8; 62:344-50
management problems, 71:236; 72:151; 77:105
mayflies as food, 63:178
midge larvae as food, 59:159
migration, 60:101; 66:203; 67:224; 70:393; 81:271
modification of sexual cycle by light control, 80:158
mortality, 64:417; 67:91
niacin requirement, 77:152
nutritional requirements, 59:126; 60:127, 140, 146; 63:167; 65:359
octomitus in, Quebec, 65:290
over-winter survival, 66:207
parasites, 60:85; 66:343; 67:228; 70:162; 71:286
parasitic copepod on, 65:334
pH tolerance range, 61:216
phenomenal growth, 60:233
population of, 65:298; 66:203; 68:285; 71:236; 76:204; 81:265
predators on eggs, 61:187
production, 60:35, 124; 76:16
protozoa in, 63:242
rearing in heated water, 65:340
relation of sucker to, 65:152
respiration of, 59:241; 68:344
saprolegnia on, 61:194
scale studies, 62:348
selective breeding of, 60:109; 64:274
spawning of, 60:102, 106; 62:344; 64:333, 356, 458
stocked from air, 65:277
stocked, depletion, 67:224
sulfamerazine, response to various dosages, 77:93
stocking of fry, 60:117
stocking size, Connecticut, 61:40
stocking results, 71:357, 362, 363; 72:92; 73:165; 79:77; 81:43, 59; 82:265
survival, 67:127; 73:108; 77:26
tagging, 66:203
tempering vs. acclimation, 70:397
tissue levels, sulfamerazine, 81:101
sulfonamide, 80:241
ulcer disease in, 68:136; 78:56
vitamin B requirement, 76:34
weight of, 62:346
whiteblindness in, 80:140
yield, 76:290
zymogen granules in, 72:264
Trout, Brown, age and growth, 81:171
asphyxial point, 64:414
biotin requirement, 77:152
blackfly in diet, 77:172
blood count, 80:185
changes in condition, 73:120
collected by shocker, 69:212; 81:66
cost of management, 81:59
production, 80:151
density, growth and movement, 73:209
depletion, 74:166
difficult to catch, 65:258
eggs, effect of rotenone on, 68:277
winter on, 81:202
purchased for Minnesota, 59:229
temperature effect on, 62:123
electrical census method, 70:408
experimental catch, 65:258
exploitation of, 81:224
feeding habits, 71:106
fertility of eggs, 77:65
fin regeneration, 72:231
food of, 59:146; 80:107; 81:213
food conversion, 65:366

furunculosis treatment, 78:117
gonad measurement and egg count, 71. 195
growth, 65:366; 75:147; 80:41, 252, 81:93
hatchery diet, 68:96
in Alberta, 70:233
in fertilized lake, 78:147
in high mountain lake, 71:254
in Lake Mead, 81:89
in Manitoba, 79:21
in Maryland, 66:403
in Michigan lake, 76:304
in Montana stream, 81:99
in Nevada, 73:174
in Utah, 81:236, 250
introduced in Argentina, 69:279
in Oregon, 69:241
in Pyramid Lake, 69:220
in pond experiment, 81:18
juvenile coloration, 71:107
killed by rotenone, 70:82; 75:140
length-frequency, 81:232
loss in hatchery, 70:280
loss in weight, 70:290
management policy, 71:333, 362; 72: 151; 77:109; 81:59
migration, 70:61; 81:270
niacin requirement, 77:152
no whiteblindness in, 80:146
oxygen consumption, 70:154
plantings, 74:35
of fry, 60:117
population in stream, 68:285
population density, 71:236; 76:204; 80: 260, 264
production, 76:16
response to various dosages of sulfamerazine, 77:93
results of planting, 70:446; 82:265
stocking and migration, 73:158
survival, 73:108; 75:147; 77:26
symptoms of D. D. T. poisoning, 75:63
tagged returns, Ohio, 63:326
temperature tolerance, 61:245
tissue level, sulfamerazine, 81:101
sulfonamides, 80:241
transportation of, 70:149
ulcer disease in, 68:142; 70:373; 78:56
Trout, cutthroat, blackfly in diet, 77:172
decline in Pyramid lake, 69:216
effect of coal washings on, 67:233
egg output, British Columbia, 61:165
food of, 63:198
growth, 67:268; 72:145; 80:251
infected with furunculosis, 62:252
in Alberta, 70:233
in high mountain lakes, 71:254
in Montana, 80:100; 81:263
in Nevada, 73:176; 81:244
in Prairie provinces, 60:233
in Utah, 81:171, 236, 250
lengths, 82:144
life history, 81:235
loss in hatchery, 70:280
migration, 82:139
Octomitus salmonis in, 63:172
Oregon native, 69:241
production, 76:16
recommended for Argentina, 69:283
rearing, 60:164
spawning, 59:169; 74:281
survival, 81:35
weights of, 82:146
Trout, dolly varden, in British Columbia, 64:318
in Manitoba, 75:335
in Prairie provinces, 60:216, 233
infected with furunculosis, 62:252
insecticides, effect on, 77:160
Oregon native, 69:241
Trout, golden, of Cottonwood Lakes, California, 64:259
in Nevada, 73:179
Trout, kamloops, egg output, British Columbia, 61:165
factors affecting production, 60:247
food of, 60:247
growth rate, 62:144
in British Columbia, 64:319
in hatchery pond, 65:175
migration, 63:80
planting of fry, 62:149
propogation, 62:144
Trout, lake, abundance, 76:135, 143
age and growth, 78:19
airbladder disease, 66:359
blood count, 80:185
catch, 60:232; 63:301; 76:136, 143
competition from ling, 70:77
cost of production, 80:151
culture of, to maturity, 63:64
depletion in Great Lakes, 69:33
depth distribution, 62:332
distribution of fry, 59:57
effect of fin removal, 80:260
of moonlight on catch, 73:52
of pollution on, 73:47
eggs, collecting, 59:57, 229
destroyed by suckers and bullheads, 61:183
production, 63:64
feeding habits, 76:301
fingerling, growth of, 59:60
planting experiment, 59:84
fin regeneration, 77:129
fishery, 76:121; 80:278; 82:178
food of, 60:232; 67:155; 78:19
food conversion, 65:366
Great Lakes Study on, report, 77:294
growth, 80:146, 185; 82:184
in Great Slave Lake, 77:81
in Lake Ontario, 74:234
in Lake of the Woods, 77:14
in Manitoba, 62:377; 78:21
in Nevada, 73:180
in Ontario, 59:259
in Saskatchewan, 73:20
in Wisconsin, 64:231
introduced into Argentina, 69:280
in Oregon, 69:241
in Pyramid Lake, 69:220
killed by rotenone, 70:82; 75:140
length-weight, 71:272, 333; 79:72
limnological data, 71:132
marking experiment, 81:17
migration, 70:393; 82:180
population, in Pyramid Lake, Alberta, 78:17
potential yield, 71:69
production, 76:16, 124, 143, 150
productivity, 70:395
propogated, 60:35, 45; 66:56
relation of bottom fauna, 82:211
relation of size to density, 70:172
sea lamprey attack, 79:71; 82:190
size limits, Lake Michigan, 64:112
smelt as factor in production, 78:176
as food, 74:312
spawning period, 59:58; 64:112; 78:19
study in Ontario, 81:111
suckers as food, 61:187
survival, 82:186
tagged, 69:63; 82:68
taking and care of eggs, 59:53
whiteblindness in, 80:146
yield, 79:275

Trout, rainbow, age of, 63:254; 75:77; 78:18
at maturity, 63:365
angling experiment, 74:63
annulus formation, 63:377
biotin requirement, 77:152
blackfly in diet, 77:172
blood count, 80:185
catch, 78:27, 47
caught in weir, 73:80; 75:165
collected by shocker, 81:66
condition factor, 63:254; 73:120
cost of management, 81:59
decline in Columbia River, 78:43
depletion, 74:166
diet, 79:94
effect of carbon dioxide on, 67:272
coal washings on, 67:232
fasting, 70:290
high carbon dioxide concentration, 72:25
moon on fishing for, 67:212
oxygen concentrations on, 61:218
placer mining silt on, 69:225
pressure on, 61:221
winter on, 81:202
egg output, British Columbia, 61:165
eggs, produced for Minnesota, 59:229
reared in gravel, 69:135
electrical census method, 70:408
electrical shocking, effect, 77:61
ether anaesthesia, 70:272
experimental stocking of legal sized fish, 68:196
fingerling tests, 79:94
food of, 59:146; 62:199; 63:255; 64:342; 65:126; 66:197; 76:301; 78:18, 71
food conversion, 65:366
fungus disease, 70:264
Gammarus as food, 62:139
gillworm infection, 61:189
Great Smoky Mountain National Park, 68:87
growth of, 60:117; 63:361; 65:366; 67:267; 71:74; 73:117; 79:94; 80:93, 251
hatchery diet, 68:96
in experimental pond, 81:18
in fertilized lake, 78:147
in high mountain lakes, 71:254
in Israel, 81:219
in Maine, 70:126
in Manitoba, 79:21
in Maryland, 66:403
in Mexico, 67:139
in Michigan stream, 81:224
in Montana, 80:89; 81:260
in New York, 71:107
in Nevada, 73:178; 80:84
in Oregon, 64:323
in prairie provinces, 60:216, 233
in private waters, 70:412
in Saskatchewan, 70:233
in South Africa, 77:75
in Utah, 81:171, 236
introduced into Argentina, 69:279
into California, 67:139
into India, 78:93
into Pyramid Lake, 69:220
insecticides, effect of, 77:160
killed by rotenone, 70:82; 75:140
length conversions, 70:283
length ratio, 79:94; 82:144
life history, 70:209
longevity of, 63:365
loss in hatchery, 70:280
loss of weight during spawning, 67:207
management policy, 71:333, 348, 353; 72:151
mayfly nymph as food, 62:139
midgefly larvae as food, 62:139
migration, 63:80, 361; 70:61; 81:271; 82:139
niacin requirement, 77:152
no whiteblindness in, 80:146
non-migratory strain, 63:316, 361; 67:139
Oregon native, 69:241
planted after weed control, 76:179
plantings, 74:35; 75:323
of fry, 60:117
population, 68:285; 76:204; 81:260, 263
problem at Shasta Dam, 70:61
production in British Columbia, 69:187
production in Virginia stream, 63:251; 66:197
production in U.S., 76:16
propogated, 60:35; 61:119
results of planting, 70:446; 82:265
scales of, 63:362
size and condition, 70:414
spawning of, 61:47, 246; 64:167, 332; 71:180
stocking, 62:197; 72:92; 72:158
sulfamerazine, response to various doses, 77:93
tagging, 69:63
temperature tolerance, 61:245
tissue levels, sulfamerazine, 81:102
sulfonamides, 80:241
ulcer disease, 68:142; 70:373; 78:56
vitamin deficiency, 70:30
vitamin B requirement, 76:34
waterboatman as food, 62:139
weight of, 82:146
winter food habits, 81:213
yield, 76:290
Trout-perch, effect of pollution on, 82:160
food of, 63:382
brook trout, 60:66
burbot, 80:56
Trout, sea, potential yield, 71:67
True bugs, food of brook trout, 60:66, 73
rainbow trout, 65:126
silver chub, 67:217
in bottom fauna, 66:183
True flies, in bottom fauna, 72:56
Trygon, 78:94
Trypanosoma, 74:23
Tryptone broth, 73:36
T-test, 82:12
Tubifex, 63:279
revulorum, 65:389
Tubifex worms, effect of fertilizer on, 63:111
in Lake Erie, 63:279
Tubificidae, 61:204; 68:232; 71:170
Tullibee, age at maturity, 73:131
catch, 60:223; 73:134
food of, 60:222
lake trout, 60:232
forms of, 60:221
growth rate, 60:222; 73:125
in Lake of the Woods, 77:17
in Manitoba, 75:330; 79:21
infested with parasite, 70:484
optimum mesh size, 79:169
sex ratio, 73:131
spawning of, 60:223
use of growth data, 79:191
Tuna, catch, 80:352; 82:320
international cooperation on, 67:152
international fishery, 79:264
potential yield, 71:65
tagging, 73:321
taxonomy, 80:110
Tuna, big-eye, in Mexican waters, 74:72
Tuna, bluefin, catch, 82:321

in Mexican waters, 67:258; 74:72
taxonomy, 80:113
Tuna, little, name change, 81:325
Tuna, yellowfin, in Mexican waters, 67: 257; 74:72
production of, 61:24
taxonomy, 80:113
Turbellaria, 71:222; 72:57; 73:200; 82:205
Turbidity, artificially circulated lake, 82: 230
Great Lakes, 75:288
measurement, 79:107
in Minnesota pond, 66:108
Norris Reservoir, 68:65
relation to abundance, 77:20
to decline of fishery, 75:281
growth, 77:225
year classes, 77:199
tolerance of fish, 75:316
Turbonella, 78:94
Turtles, marks left on fish, 63:230
recovered by electricity, 61:176
Turtle egg, food of kingfisher, 76:113
Turtle, Blandings, in muskellunge marsh, 70:423
in Whitmore lake, Michigan, 70:205
Turtle, Musk, effect of D.D.T. on, 75:58
in muskellunge marsh, 70:423
in Whitmore Lake, Michigan, 70:205
Turtle, eastern painted, effect of D.D.T. on, 75:58
in muskellunge marsh, 70:423
in Whitmore Lake, Michigan, 70:205
Turtle, snapping, effect of D.D.T., 75:58
occurrence in Champaign county, Illinois, 59:252
in Muskellunge marsh, 70:423
in Whitmore Lake, Michigan, 70:205
Turtle, soft-shell, effect of rotenone on, 71:187
Turtle, wood, effect of D.D.T., 75:58
Tennessee Valley Authority, Cherokee Reservation, 73:194
differential in fish harvestability, 80:46
effect of impoundment on fishing intensity, 72:103
fish harvest, 80:2
fishery investigation, 68:61
fisheries program, 66:398
multiple use and fish production, 71: 299, 351
possible commercial fishery, 73:137
reservoir hoop net catches, 73:37
fishing intensity, 72:264
population, 71:201
water analysis, 66:71
Typha, 76:187, 342; 78:64
angustifolia, 75:203

U

Ulaborus, 79:150
Ulae, in Hawaiian ponds, 74:270
Ulcer disease, etiology of, 78:56
identical with fin rot, 70:379
in native fish, 70:373
loss from, 76:16; 78:60
permanganate treatment, 70:376
resembles columnaris, 73:34
survival of brook trout, 70:407
Ulmus americana, 75:121, 127
Ulua, in Hawaiian ponds, 74:272
Ulothrix, 59:184; 82:22
Ulva, 74:265
Umbra limi, 59:110; 62:340; 63:26; 67: 127; 68:271, 285; 70:82, 144, 423; 72:178, 270; 75:38, 205, 223; 76:27, 109, 112, 250, 304; 80:69
Umbridae, 61:132
Umbrina sinaloe, 74:77
Unbalanced fishery, 73:149
Unutilized fishes, potential production, 71:63
Upper Mississippi Wildlife and Fish Refuge, 59:106; 63:99
Urethane, Anaesthetic for fish, 65:339
Urophycis tenius, 64:157
United States fishery statistics, 71:61
United States Fish and Wildlife Service, 80:348; 81:1, 2, 53, 55, 57, 151
United States Museum, 70:141; 73:284
United States Public Health Service, 81:2
Utah, effect of drought on fish, 64:60
Fish Lake, productive trout water, 65: 122
legislation, 59:28; 64:99; 65:39
Utilization, fish stocks, 76:285
of food, 70:339-346
problem of, 69:34
Utricularia, 59:177; 64:443
vulgaris, 64:464
Uvulifer ambloplites, 69:271

V

Vacuum, effects on fish, 70:469
Vallisneria, 64:443; 66:182; 73:197; 74: 351
americana, 82:111
spiralis, 64:446, 464; 72:136
Valvata, 60:191, 219; 76:308
sincera, 80:61, 65
tricarinata, 60:219, 319; 80:61, 65
Vampyrella, 59:183
Van Hofts Law, 63:211; 64:282
Variability, length, photographic recording of, 79:94
Variation, bottom food, 81:211
Vaucheria, 72:37; 74:252, 265; 75:127
Vegetable matter, food of bullhead, 60:232
of ling, 69:195
of trout, 59:146
Vegetation, control of, in ponds, 59:88
with arsenic, 60:270; 61:143
cutter, 64:375
destroyed by crayfish, 64:150
effect of fertilizer on, 65:186
effect of oxygen, 64:181
effect of pollution on, 60:300
in Quebec lakes, 62:198
spawning need of Golden Shiner, 64:94
Velocity, determination of, 72:36
Velsicol, AR-50, effect on trout and salmon, 77:163
Vermont, brood stock in hatchery, 62:141
food of brook trout, 63:182
grayling culture in, 62:171
legislation, 59:28; 64:99
production of test stream, 65:224
trout diets in, 60:156
rearing of black spotted trout, 60:164
spawning of rainbow, 64:167
Veronica, 76:249
connata, 72:37
Vertebrae, use of for age determination, 80:119
Vertebrates, effects of D.D.T., 75:55
Vespidae, 69:251
Vietosoma parvum, 70:166
Vigil pellucidus, 60:257
Vinson Bill, Antipollution, 67:24; 68:37
Virginia, age of trout in stream, 66:197
food of rainbow, 63:255
legislation, 59:28; 62:29; 64:38, 99
oyster production, 63:157
pollution abatement, 62:359
production of bottom fauna in stream, 66:193

production of rainbow trout in stream, 63:251; 66:196
spawning of rainbow, 64:167
Viscera, as fish food, 73:63
Visibility, haddock tags, 71:232
Vitamin content, trout, 74:81
deficiency, trout, 72:30
from ling, 60:202
in trout diet, 59:126; 61:71; 70:369; 74:83
requirements of goldfish and channel cat, 63:338
Vitamin A, in atlantic whiting, 66:420
Vitamin B, deficiency, 73:63
requirement of trout, 76:34
Vitamin D, in atlantic whiting, 66:420
in fish liver, 61:59
Vitis, 75:127, 130
Vivipara, 75:116
Volatile matter, in Minnesota ponds, 66:109
Volume of eggs, changes in, 71:284
Voluta, 78:94
Volvocales, 66:114
Volvox, 60:254; 62:168; 66:124, 288
Vorticella, 59:176; 66:119, 123; 69:170; 82:16, 22
campanula, 64:447

W

Walleye, abundance in Lakes Huron and Michigan in relation to stocking, 66:143
age and growth, 73:90
attack by sea lamprey, 76:173
body-scale relationship, 73:91
caught in weir, 76:165
capture in seines, 70:384
catch, 60:228; 63:301; 65:213; 66:90, 325; 68:356; 77:16, 86; 78:163; 80:50, 200; 82:251
competition from burbot, 80:56
cost of raising, Minnesota, 59:231
depletion in Great Lakes, 69:33
depth distribution, 62:333; 75:65
distribution, Minnesota, 61:240
distribution as fry, 71:293
effect of fishery on spawn, 79:174
effect of pollution, 82:160
effect of rough fish removal, 82:106
effect of turbidity, 75:282
effect of vacuum, 70:469
estimate of population, 81:8
fluctuations in population, 73:100
feeding habits, 73:244
food of, 60:258; 63:390; 80:199
of burbot, 80:64
of northern pike, 60:255
fry, success of planting, 59:232
planting and catch, 71:118
growth rate, 63:348; 75:306; 79:30; 81:193
host of tapeworm, 64:392
in Algonquin Park lake, 75:20
in Des Moines River, Iowa, 75:116
in experimental pond, 81:19, 30
in Manitoba, 75:332; 79:20
in Maryland, 66:403
in Sacandoga Reservoir, New York, 61:140
in Spirit Lake, Iowa, 77:32
in Tennessee, 68:244
in trap nets, 62:103
killed by rotenone, 80:37
lakes, 78:163
movement of marked, 81:179
migration of, 68:163
mortality, 68:247; 71:112; 75:175; 77:120
names of, 70:34
name change, 81:325
netting of, 59:202; 73:29
optimum mesh size, 79:167
parasites of, 71:286
population study, 72:187; 78:163; 82:34
potential yield, 71:69
production, 65:275; 71:319; 73:243
propogation, 59:228; 60:45, 119; 61:116; 66:56, 277
recovery of marked, 63:326; 75:36
removal by electricity, 70:407
sexual maturity, 73:99
size limits, Lake Michigan, 64:112
spawning of, 60:228; 64:112
stocked in Virginia, 80:197
stocking policy, 71:345, 352
strength of year classes, 77:198
suckers as food of, 61:187
toxicity threshold, 78:100
trapped in weir, 73:76
use of growth data, 79:190
year classes, 75:308
yield of fingerlings in ponds, 76:324
Walleye, blue, name change, 81:325
Washington, diversion, screen description, 61:270
legislation, 59:28; 64:38, 99; 65:39
quantity hatchery food used, 65:399
Quinault Lake, reservoir fishery problem, 66:64
spawning chub, 65:143
summary of fishery research, 63:262
value of salmon, 64:88
Washington, D.C., pollution from, 62:30
Wasps, food of brook trout, 60:73; 63:190
food of grayling, 68:190
food of rainbow, 63:255; 66:197
food of trout, 71:256
Wastes, disposal methods, 79:220
mill, effect on aquatic organisms, 79:55
munitions, lethal concentrations, 73:48
radioactive, significance, 79:217
utilization of, 71:63
Water analyses, Geochemical interpretation, 74:223
of hatchery, 63:244
from oil field, 64:81
Water Conservation, 64:54
Water, erosion a menace to, 62:370
impounded, studies on in Ohio, 63:265
in fish meal, 61:65
level, effect on fisheries, 70:193
on reproduction, 82:248
fluctuating, cause of depletion of Upper Mississippi River fisheries, 60:279
relation to fish runs, 75:257
movements, in artificially circulated lake, 82:228
effect on Atlantic Salmon migration, 64:353
public, loss of, 62:369
quality, classification, 76:326
relation to productivity, 76:324
standards, 70:38
regulation of, resolution, 61:29
requirements of muskellunge, 64:316
salt, effect on fish, 64:82
suitability for stocking, 62:256
Water arum, in Quebec, 64:466
Waterboatman, food of brook trout, 60:82
rainbow trout, 62:139; 63:255; 66:197
in bottom fauna, 60:187; 71:170
in Quebec lakes, 62:198
Water bugs, effect of rotenone on, 68:271
food of grayling, 68:190

in Cayuga Lake, N.Y., 69:205
Watercress, food of fish in hatcheries, 62:117
Water crowfoot, in Quebec, 64:464
Waterfleas, food of bluegill, 69:246
brown bullhead, 69:206
fish, 63:131
grayling, 68:190; 69:246
smallmouth bass fry, 68:330
smallmouth bass, 69:121
trout, 71:256
Waterlily, effect of copper sulfate on, 69:145
in Quebec, 62:198
Water lobelia, in Quebec, 64:465
Water marigold, in Quebec, 64:464
Water milfoil, in Quebec, 64:464
Water mites, food of brook trout, 60:65, 73; 63:194; 65:127
cutthroat trout, 63:199
grayling, 68:190
lake trout, 76:312
rainbow trout, 65:126; 76:305
in bottom fauna, 66:183; 71:170; 72:56
in coastal lagoon, 69:180
lethal dosage of arsenic, 61:230
Water moss, in Quebec, 64:467
Water net, pond nuisance, 73:59
Water snake, predation on trout, 62:138
Water springtails, food on brook trout, 60:73
Water striders, food of rainbow trout, 66:197
Water weed, in Quebec, 64:465
Water willow, in smallmouth bass stream, 68:331
shelter for minnow, 70:313
Watts Bar Reservoir, bottom fauna, 72:52; 73:206
commercial fishery, 73:139
fishing intensity, 62:103
production, 72:212
Weakfish, in Maryland, 66:403
Weed control, chemical, 70:367
chlorinated hydrocarbons, 76:177
copper sulfate, 77:143
crayfish introduced for, 61:149
fertilizer used, 71:94, 341
in ponds, 70:363
sodium arsenite, 61:143; 62:159
Wisconsin beaches, 65:119
Weevils, food of rainbow trout, 63:255; 66:197
Weighing, hatchery fish, 70:275
Weight, of atlantic salmon, annual fluctuations, 62:305; 67:189, 201
of brook trout, 62:346
calculation of fish in ponds, 66:422
computation of loss, 70:293
changes in trout under diet, 68:316
of cisco, 67:240
of fish taken by shocker, 69:213
gain in, hatchery fish, 72:145
per day, 72:220
growth in, 72:75
kiyi, 74:113
hatchery fish, 70:279
length relationship, 72:123, 259; 79:116, 121
lake trout, 79:72
muskellunge, 77:42
rainbow trout, 79:95
Reighard's chub, 72:123
sauger, 79:34
whitefish, 77:231
yellow perch, 79:38
loss, brown trout, 70:290
by hatchery fish, 81:35
at spawning, 74:127
atlantic salmon, 64:220
rainbow trout, 67:207
salmonids in Argentina, 69:282
standardization in fishery work, 75:157
trout per cubic foot of water, 65:372
yearling rainbow trout, 70:417
sea lamprey, down stream migrants, 81:283
Weirs, for counting migrants, 71:151
sockeye salmon, 61:129
shrimp, 74:78
two-way fish, 73:70
Wesson oil, in trout diet, 63:171
Western Division, report of, 79:296; 80:iv, 327; 81:305; 82:302
West Virginia, legislation, 59:28; 63:35; 64:99
loss of trout in drought, 60:251
University of, 70:138
Whaling, early fishery, 66:434
in Mexican waters, 67:257
Whales, international agreement, 62:23
investigations, 79:262
Multilateral convention for regulation, 65:24; 66:24; 77:311; 78:226
spermaceti, in Mexican waters, 67:257
Wheeler Reservoir, 71:201, 349; 72:246; 73:137; 80:2
Whirling sickness, treatment, 70:300
Whitefish, age of, 62:311; 68:152; 77:178
artificial feeding, 70:180
catch, 60:217; 62:311; 63:301; 71:352; 77:123; 80:281, 355
competition from burbot, 80:57
depletion by trap nets, 63:34; 69:33
depth distribution, 62:332
effect of sea lamprey on, 76:173
of turbidity on, 75:282
eggs, artificially fertilized, 62:393
fertility of, 60:220; 61:205; 63:144
fertilization experiments, 61:205
incubation period, 60:221
number of, 60:220; 61:245
output, British Columbia, 61:165
estimate of daily food consumption, 65:288
feeding habits, 62:308
fertility of milt, 61:205
food of, 60:219; 63:381
fry plantings, 71:118
gillnet catches, 73:29
growth rate, 60:218; 64:231; 75:306
hatchery in Manitoba, 60:119
in Lake Huron, 82:180
in Lake of the Woods, 73:132; 77:13
in Lake Ontario, 74:234
in Manitoba, 75:330; 79:21
in Nevada, 73:188
in Red Lake, Minnesota, 81:182
introduced into Argentina, 69:280
in Canada, 64:368
migration, 70:393
mortality, 77:114, 123
netting for, in Minnesota, 59:230
optimum mesh of gill net, 79:169
parasite of, 70:162; 71:286
planted, 59:225; 60:116
population in Great Slave Lake, 77:81
potential yield, 71:69
predation on eggs, 60:221
production in deep water trapnets, 62:67
production, 76:150; 78:176
propogated in hatchery, 60:35; 66:56
size limit, Lake Michigan, 64:112
spawning of, 60:219; 64:112
tagging experiments, 69:63
toxicity threshold, 78:100
year classes, 75:308
Whitefish, menominee, parasites of, 70:162
Whitefish, mountain, age and growth, 78:17
effect of sucker reduction, 78:17, 27

food of, 78:18
cutthroat trout, 63:202
in Manitoba, 75:335
in Montana, 81:268
in prairie provinces, 60:216
in Saskatchewan, 70:233
in Utah, 81:171, 236, 250
infected with furunculosis, 62:252
Oregon native, 69:241
Whitefish, ocean, in Mexican waters, 74:76
Whitefish, round, catch, 77:86
in Ontario, 81:115, 126
Whitefish, yellowstone, food of, 80:99
Whitefish meal, in trout diet, 68:99
Whitespot disease, 62:159; 63:245
Whiting, atlantic, composition of, 66:415
recipes for, 66:416
utilization of, 66:415
Whiting, in salmon diet, 64:155
potential yields, 71:65
Williamette River, resolution, 71:53
valley project, 71:303, 310
Wilson Reservoir, 71:301, 351; 73:137
Wind, effect on atlantic salmon migration, 64:353
Winter activity on trout, 81:209
effect on trout, 81:202
effect on trout food, 81:202
Winterkill, bass-bluegill ratio, 78:83
effect on growth rate, 78:82
in lakes, 62:286
in high mountain lakes, 71:254
in Iowa lake, 80:50
in Manitoba lake, 79:28
in Michigan lakes, 76:23
pondfish, 76:19
trout, 76:16; 77:27; 81:215
survival over winter, trout, 81:38
Wisconsin Conservation Dept., 71:315, 343
Wisconsin, effect of copper sulfate on fish and fish food, 65:115
effect of drought on fish, 64:57
growth of whitefish in, 64:231
growth of rock bass, 71:131
legislation, 59:28; 64:99
research in progress, 63:30
smelt in Green Bay, 66:139
successful fishway, 61:247
summary of fishery research, 63:262
value of clean streams, 64:87
water weed control, 65:119
yield of lakes, 66:306
Wolfish, potential yields, 71:65
Wolffia columbia, 64:371
punctata, 64:371
Woodpulp, manufacture, 79:56
Woods Hole Oceanographic Institution, 70:140
Woody Island Wildlife Refuge, 70:29
Works Progress Administration, 71:336
Worms as bait, 65:216
food of blacknose dace, 64:73
bluegill, 69:246
brook trout, 65:127; 71:220
smelt, 66:140
hatchery food, 65:389
in bottom fauna, 66:183
in coastal lagoon, 69:180
Worms, hookheaded, in Ohio fish, 66:357
in pike and pickerel, 69:268
Worms, parasitic, treatment of, 74:35
Wyoming, effect of drought on fish, 64:58
legislation, 59:28; 64:99; 65:39; 71:28

X

Xanthidium, 61:211; 65:107; 69:146
Xantho scabberus, 78:94
Xanthopterin, relationship to vitamin B complex, 74:81
Xiphias gladius, 67:258; 74:76
Xiphopenaeus, 73:311
kroyeri, 62:108, 112; 73:312
riveti, 73:312
Xiphophorus, 74:351
Xyrauchen texanus, 80:89; 81:325

Y

Year classes, comparative strength, 75:224
dominant, 73:100
fluctuation, 77:197
in relation to turbidity, 75:308
lake trout variation, 75:25; 81:111, 132; 82:178
whitefish, 77:194
yellow bass, 82:91
Yearlings, definition, 71:291; 74:19
Yeast, in trout diet, 59:126; 60:129; 61:61; 72:34
wood, value as fertilizer, 79:105
Yellowtail, catch, sportfishing, 63:335; 69:117
in Mexican waters, 74:72
tagging, 73:321
Yield, analysis, 76:291
at various stocking ratios, 77:144
carp, 81:218
method of calculation, 82:116
sustained, Great Lakes Fishery, 63:292; 66:131
trout, Lake Michigan, 79:275
Meander lake, 79:128
of inland waters, 65:350
per acre, 71:260, 350, 354
brook trout, 70:411
per unit effort, 71.236; 76:286
rearing ponds, 73:250
T.V.A. impoundment, 73:142, 145
reduced total, 76:286
sauger, 79:41
theoretical, in stabilized fishery, 82:115
trout, 81:56
trout stream, 72:95
walleye, 76:324
Wisconsin lakes, 66:306
yellow perch, 79:41
Yugoslavia, carp production, 62:394

Z

Zaitha flumineum, 66:197
Zanclus canescens, 59:181
Zander, mortality in, 71:116
Zannichellia palustris, 65:124
Zea mays, 75:127
Zebrasoma flavescens, 59:180
Zinc, in crab meat, 65:343
Zizania, 59:177
aquatica, 60:227
Zoethamnium adamsi, 64:447
Zonite, used in treating gill worm, 61:189
Zoology, course for fishery biologists, 70:130
Zooplankton, effect of copper sulfate, 65:108
effect of fertilizer on, 63:103
effect of low oxygen on, 64:414
Lake Erie, 63:277
Zostera, 64:307
Zymogen granules in fishes, 72:263
Zygnema, 59:174; 61:210; 64:465; 73:388; 82:22
Zygoptera, 60:192; 63:384; 65:63, 66-7; 69:195; 70:320, 352; 72:56, 283; 73:200-2, 246; 76:109; 82:15
Zygospore, food of mosquito fish, 61:211

PART II. AUTHOR INDEX

A

Agersborg, H. P. Kjershow
Salient problems in the artificial rearing of salmonoid fishes, with special reference to intestinal fungistitosis and the cause of whitespot disease. 63: 240-50
An inexpensive balanced diet for trout and salmon. 64:155-162
When do the rainbow trout spawn? 64:167-169
Aquiculture and agriculture. 64:266-269
Qualitative and quantitative analysis of foods for salmonoids reared artificially. 64:435-442

Agersborg, H. P. Kjershow, and Gus H. Radebaugh
The economic value of treated sewage effluent in wildlife conservation with special reference to fish and waterfowl. 64:443-456

Aitken, W. W.
Iowa nursery pond kettle and outlet. 64:170-171
Iowa stream improvement work, 65: 322-323
Fish movement under the ice in an Iowa lake. 66:98-103

Aitken, W. W., and E. W. Surber
Observations on plantings of fingerling rainbow, brown, and brook trout from circular pools. 62:133-140

Alcorn, J. R., and Robert R. Miller
The introduced fishes of Nevada with a history of their introduction. 73:173-193

Aldrich, A. D.
The Tulsa municipal fish hatchery and problems of pond fish culture. 65: 179-183
Results of seven year's intensive stocking of Spavinaw lake, an impounded reservoir. 68:221-227

Allen, K. Radway
Comparison of bottom faunas as sources of available fish food. 71:275-283

Allison, Leonard N.
Horse liver as the causative factor in white blindness of hatchery brook trout. 80:140-147

Anderson, Bertil G.
The apparent threshold of toxicity to *Daphnia magna* for chlorides of various metals when added to Lake Erie water, 78:96-113

Anderson, J. B., Max Katz, and Willis M. VanHorn
The effect of kraft pulp mill wastes on some aquatic organisms. 79:55-63

Anderson, William W. and Milton J. Lindner
A provisional key to the shrimps of the family Penaeidae with especial reference to american forms. 73:284-319

Anderson, William W., Milton J. Lindner, and Frank Weymouth
A summary of the life history of the common shrimp (*Penaeus setiferus*) of the south atlantic and gulf coasts of the United States. 62:108-110

Applegate, Vernon C., and William F. Carbine
The fish population of Deep Lake, Michigan. 75:200-227

Applegate, Vernon C., and Clifford L. Brynildson
Downstream movement of recently transformed sea lampreys, *Petromyzon marinus*, in the Carp Lake River, Michigan. 81:275-290

Appleget, John, and Lloyd L. Smith, Jr.
The determination of age and growth from vertebrae of the channel catfish, *Ictalurus lacustris lacustris*. 80:119-139

Armstrong, George S.
Mortality, rate of growth and fin regeneration of marked and unmarked lake trout fingerlings at the provincial fish hatchery, Port Arthur, Ontario. 77:129-131

Atkinson, N. J.
The destruction of grey trout eggs by suckers and bullheads. 61:183-188
A bacterial disease of trout eggs and fry and its prophylaxis with acriflavine. 62:152-155
A study of comparative results from stocking barren lakes with rainbow trout. 62:197-200

B

Baeder, Helen A., Peter I. Tack, and Albert S. Hazzard
A comparison of the palatability of hatchery reared and wild brook trout. 75:181-185

Bailey, Reeve M., and Harry M. Harrison, Jr.
Food habits of the southern channel catfish in the Des Moines River, Iowa. 75:110-138

Bajkov, Alexander
Fishing industry and fisheries investigations in the prairie provinces. 60: 215-237
Fish population and productivity of lakes. 62:307-316
Native game fish in Manitoba. 62: 377-379
How to estimate the daily food consumption of fish under natural conditions. 65:288-289

Baldwin, N. S.
The american smelt, *Osmerus mordax* (Mitchill), of south bay, Manitoulin Island, Lake Huron, 78:176-180

Ball, Robert C.
A tagging experiment on the fish population of Third Sister Lake, Michigan. 74:360-369
Recovery of marked fish following a second poisoning of the population in Ford Lake, Michigan. 75:36-42
A summary of experiments in Michigan lakes on the elimination of fish populations with rotenone, 1934-1942. 75:139-146
Fertilization of natural lakes in Michigan. 78:145-155

Ball, Robert C., and C. J. D. Brown
A fish population study of Third Sister Lake. 72:177-186
An experiment in the use of derris root (rotenone) on the fish and fish food organisms of Third Sister Lake. 72:267-284
Ball, Robert C., Frank F. Hooper, and Howard A. Tanner
An experiment in the artificial circulation of a small Michigan lake. 82:222-241
Bangham, R. V.
Parasites of bait minnows. 59:198-201
Parasites of the spotted bass and summary of smallmouth and largemouth black bass from Ohio streams. 63:220-228
Tagging native stream fish. 66:316-323
Parasites of Wayne county (Ohio) stream fish. 66:357-358
Parasites of Centrarchidae from southern Florida. 68:263-268
Parasites of fish of Algonquin Park Lakes. 70:161-171
Bangham, R. V., and Neville L. Bennington
Movement of fish in streams. 68:256-262
Barrett, Paul H.
Relationships between alkalinity and adsorption and regeneration of added phosphorus in fertilized trout lakes. 82:78:90
Bartsch, Alfred F., Elmer F. Herman, and Kenneth M. Mackenthun
A heavy mortality of fishes resulting from the decomposition of algae in the Yahara River, Wisconsin. 75:175-180
Beach, U. Sidney
The destruction of trout by fish ducks. 66:338-342
Bean, D. A., J. A. Clague, and C. R. Fellers
Composition and utilization of atlantic whiting. 66:415-422
Beckman, William C.
Increased growth of the rock bass, *Ambloplites rupestris* (Rafinesque) following reduction in the density of the population. 70:143-148
Further studies on the increased growth rates of the rock bass, *Ambloplites rupestris* (Rafinesque) following the reduction in density of the population. 72:72-78
The length-weight relationship, factors for conversions between standard and total lengths, and coefficients of condition for seven Michigan fishes. 75:237-256
The rate of growth and sex ratio for seven Michigan fishes. 76:63-81
Changes in growth rates of fishes following reduction in population densities by winterkill. 78:82-90
Belding, David L.
The respiratory movements of fish as an indicator of a toxic environment. 59:238-245
A proposed method of recording fish growth and grading waters for stocking. 62:256-257
Improved technical methods for determining the annual growth of salmon parr by scale measurements. 64:103-106
The spawning habits of the atlantic salmon. 64:211-218
The cause of the high mortality in the atlantic salmon after spawning. 64:219-224
Observations on the growth of atlantic salmon parr. 65:157-160
Atlantic salmon parr of the west coast rivers of Newfoundland. 66:211-224
The salmon of the Moisie River. 67:195-206
The number of eggs and pyloric appendages as criteria of river varieties of the atlantic salmon. 69:285-289
Migration of the atlantic salmon in the gulf of St. Lawrence as determined by tagging experiments. 69:290-295
Belding, David L., and Mildred P. Clark
Observations on the Salmon Parr of the Margaree River. 67:184-194
Belding, David L., and Doris M. Hyde
Notes on the ocean feeding grounds of the atlantic salmon. 62:304-306
Belding, David L., and J. Arthur Kitson
Spring-run and fall-run atlantic salmon. 64:225-231
Belding, David L., and Beulah Merrill
A preliminary report upon a hatchery disease of the Salmonidae. 65:76-84
Belding, David L., Mildred J. Pender, and James A. Rodd
The early growth of salmon parr in Canadian hatcheries. 62:211-223
Belknap, G. W., and L. R. Richardson
A method of planting *Osmerus mordax* Mitchill on a small scale. 64:432-434
Bell, Milo C.
Screening of open diversions in the state of Washington. 61:270-279
Bell, Frank T.
The investigation and regulation of the pacific halibut fishery. 63:85-90
Water conservation. 64:54-56
Federal and state cooperation in fishery investigations. 65:246-252
The benefits of international cooperation in fishery research. 67:147-154
Bell, G. S.
Toronto anglers' association. 60:238-239
Bennett, George W.
Experimental largemouth bass management in Illinois. 80:231-239
Bennington, Neville L., and Ralph V. Bangham
Movement of fish in streams. 68:256-262
Berrian, William, and Leo Shapovalov
An experiment in hatching silver salmon (*Oncorhynchus kisutch*) eggs in gravel. 69:135-140
Berriozabal, Felipe B.
The management of fish hatcheries in Mexico. 67:94-95
Berry, A. E.
Water pollution in Ontario. 60:306-310
Birdseye, Clarence
Probable influence of quick-freezing on the shellfish industries. 62:80-83
Birge, E. A.
Fish and their food. 59:188-194
Bjorn, Eugene E.
Preliminary observations and experimental study of the ling, *Lota maculosa* in Wyoming. 69:192-196
Boesel, M. W.
The food of nine species of fish from

the western end of Lake Erie. 67:215-223
Boesel, M. W., and Lela A. Ewers
The food of some Buckeye Lake fishes. 65:57-70
Bond, Lyndon H., and George A. Rounsefell
Growth-control charts applied to atlantic salmon. 78:189-191
Bonham, Kelshaw
Food of gars in Texas. 70:356-362
Some tests with experimental groups of fingerling rainbow trout, *Salmo gairdneri*, on uniformity and rate of growth, diet, and photographic size-recording. 79:94-104
Bonn, Edward W.
The food and growth rate of young white bass (*Morone chrysops*) in Lake Texoma. 82:213-221
Bonnet, Luis C.
Possibilities for the promotion of the commercial fisheries of Puerto Rico. 70: 95-97
Bonnot, Paul
Methods of collecting oyster spat. 69: 263-267
Borodin, N. A.
Summary of experiments on the "anabiosis" of fishes made in 1931 and 1932 at Woods Hole Oceanographic Institute. 62:340-341
Some suggestions concerning the introduction of some Russian fishes in Canadian waters. 64:368-369
Bost, J. E.
Why is there no text book on fish culture? 66:298-300
Bower, E. A.
The Warner-Bower fish conveyor. 66: 411-415
Bradt, Glenn W.
Michigan's beaver-trout management program. 65:253-257
Branion, Hugh
The marketing of the ling (burbot). 60:199-203
Brett, J. R.
Tempering versus acclimation in the planting of speckled trout. 70:397-403
The design and operation of a trap for the capture of migrating young sockeye salmon. 75:97-104
Briggs, John Carmon
The quantitative effects of a dam upon the bottom fauna of a small California stream. 78:70-81
Brockway, Donald R., and Arthur M. Phillips
The niacin and biotin requirements of trout. 77:152-159
Brown, C. J. D., and Robert C. Ball
A fish population study of Third Sister Lake. 72:177-186
An experiment in the use of derris root (rotenone) on the fish and fish-food organisms of Third Sister Lake. 72:267-284
Brown, C. J. D., and Gertrude C. Kamp
Gonad measurements and egg counts of brown trout (*Salmo trutta*) from the Madison River. 71:195-200
Brown, Dell
The basses of Arkansas and some experiments in their propogation. 61:83-85
Brown, L. A., and P. R. Needham
Notes on the use of water fleas as fish food. 63:131-138
Brown, Merrill W.
Smallmouth black bass propogation in California. 69:119-124
Brown, William H.
Results of stocking largemouth black bass and channel catfish in experimental Texas farm ponds. 80:210-217
Bruce, C.
Paper on fishways. 60:240-243
Brynildson, Clifford, and Vernon C. Applegate
Downstream movement of recently transferred sea lampreys, *Petromyzon marinus*, in the Carp Lake River, Michigan. 81:275-290
Burdick, George Edgar, and Morris Lipschuetz
Toxicity of ferro- and ferricyanide solutions to fish, and determination of the cause of mortality. 78:192-202
Burghduff, A. E.
An aerating device for use in the transportation of fish. 69:296-299
Burr, J. G.
Electricity as a means of garfish and carp control. 61:174-182
Burr, J. G., H. E. Faubion, and A. H. Wiebe
The problem of stream pollution in Texas with special reference to salt water from oil fields. 64:81-86
Burrows, Charles R., John B. Moyle, and Jerome H. Kuehn
Fish populations and a catch data from Minnesota lakes. 78:163-175
Burrows, Rogers E., and Frederick F. Fish
Experiments upon the control of trichodiniasis of salmonid fishes by prolonged circulation of formalin solution. 69:94-100
Butler, G. E.
Fish culture in the prairie provinces and some of its results. 60:119-120
Artificial propogation of walleyed pike. 66:277-278
Artificial feeding of whitefish fry. 70:180-182
The lakes and lake fisheries of Manitoba. 79:18-29
Butler, Robert Lee, and Lloyd L. Smith, Jr.
The age and rate of growth of the sheepshead, *Aplodinotus grunniens* Rafinesque, in the Upper Mississippi River navigation pools. 79:43-54
Butler, Robert Lee, Lloyd L. Smith Jr., and Laurits W. Krefting
Movements of marked walleyes, *Stizostedion vitreum vitreum* (Mitchill), in the fishery of the Red Lakes, Minnesota. 81:179-196
Byrd, I. B.
Depth distribution of the bluegill, *Lepomis macrochirus* Rafinesque, in farm ponds during summer stratification. 81:162-170

C

Cahn, Alvin R.
The fisheries program in the Tennessee valley. 66:398-402
Progress report of the fisheries investigations of the Tennessee Valley Authority. 68:61:66
Carbine, W. F.
Observations on the life history of the northern pike, *Esox lucius* L., in

Houghton Lake, Michigan. 71:149-164
Carbine, W. F., and Vernon C. Applegate
The fish population of Deep Lake, Michigan. 75:200-227
Carbine, W. F., and Burton P. Hunt
Food of young pike, *Esox lucius* L., and associated fish in Peterson's ditch, Houghton Lake, Michigan. 80:67-83
Carbine, W. F., and David S. Shetter
Examples of the use of two-way fish weirs in Michigan. 73:70:89
Carlander, Kenneth D. .
Growth, length-weight relationship and population fluctuations of the tullibee, *Leucichthys artedi tullibee* (Richardson) with reference to the commercial fisheries, Lake of the Woods, Minnesota. 73:125:136
Age, growth, sexual maturity and population fluctuations on the yellow pike-perch, *Stizostedion vitreum vitreum* (Mitchill), with reference to the commercial fisheries, Lake of the Woods, Minnesota. 73:90-107
Some trends in the commercial fisheries of Lake of the Woods, Minnesota. 77:13-25
Some considerations in the use of fish growth data based upon scale studies. 79:187-194
Growth rate studies of saugers, *Stizostedion canadense canadense* (Smith) and yellow perch, *Perca flavescens* (Mitchill) from Lake of the Woods, Minnesota. 79:30-42
What becomes of the PhD's in fisheries? 81:1-3
Carlander, Kenneth D., William M. Lewis, C. E. Ruhr, and Robert E. Cleary
Abundance, growth, and condition of yellow bass, *Morone interrupta* Gill, in Clear Lake, Iowa, 1941-1951. 82:91-103
Catt, James
Some suggestions for breeding speckled trout. 60:114-115
Copper sulfate in the elimination of coarse fish. 64:276-280
Chamberlain, Thomas K.
Research in stream management in the Pisgah National Forest. 72:150-176
Chapman, Wilbert McLeod
Effects of a decreasing oxygen supply on sockeye and chinook salmon. 69:197-204
Chapman, V. B., and F. E. J. Fry
The lake trout fishery in Algonquin park from 1936 to 1945. 75:19-35
Clague, J. A., C. R. Fellers and D. A. Bean
Composition and utilization of the atlantic whiting. 66:415-422
Clapp, Alva
Some experiments in rearing channel catfish. 59:114-117
Clark, G. H.
The need for a measure of the angler's catch. 64:49-53
Clark, G. H., and Richard Croker
A method of collecting statistics of marine sport catches in California. 63: 332-337
Clark, G. H., and S. Ross Hatton
Savings gear in the California dragnet fishery. 69:106-110
Clark, Mildred P., and David L. Belding
Observations on the salmon parr of the Margaree River. 67:184-194
Clark, O. H.
Stream Improvements in Michigan: 75:270-280
Clark, O. H., and David S. Shetter
The effect of deflectors in a section of a Michigan trout stream. 76:248-278
Clausen, Ralph G.
Fish metabolism under increasing temperature. 63:215-219
Cleary, Robert E., Kenneth D. Carlander, William M. Lewis, and C. E. Ruhr
Abundance, growth, and condition of yellow bass, *Morone interrupta* Gill, in Clear Lake, Iowa. 1941-1951. 89:91-103
Clemens, Howard Paul
The growth of burbot, *Lota lota maculosa* (LeSueur) in Lake Erie. 80: 163-173
The food of the Burbot, *Lota lota maculosa* (LeSueur) in Lake Erie. 80: 56-66
Clemens, Howard P., and Mayo Martin
Effectiveness of rotenone in pond reclamation. 82:166-177
Clemens, W. A.
The problem of the conservation of the sockeye salmon in British Columbia. 60:262-268
A course of scientific instruction for fish cultural officers. 61:164-170
The aim of research in fish culture in Canada. 62:261-266
The predator and coarse fish problem in relation to fish culture. 64:318-322
Cleveland, M. M., and C. R. Fellers
Comparison of laboratory and practical tests for determining the nutritive value of fish meals. 64:293-303
Clifford, Carl G.
Comparison of coho salmon fry from eggs incubated in gravel and in hatchery baskets. 69:132-134
Cobb, Eben W.
Making the most of a limited water supply in trout rearing. 61:39-42
Improved equipment for lobster rearing. 62:84-88
Results of trout tagging to determine migrations and results from plants made. 63:308-318
Cobb, Eben W., Mary F. Crowell, C. M. McCay, and John W. Titcomb
The relative value of plant and animal by-products as feeds for brook trout and the basic nutritional requirements of brook trout in terms of proteins, carbohydrates, vitamins, inorganic elements and roughage. 59: 126-145
Cobb, Eben W., Mary F. Crowell, C. M. McCay, John W. Titcomb, and A. Tunison
The nutritional requirements of trout. 60:127-139
Cobb, Eben W., Mary Crowell, C. M. McCay, A. Tunison, D. K. Tressler, S. P. MacDonald, and John W. Titcomb
The nutritional requirements of trout and chemical composition of the entire trout body. 61:58-80
Cobb, Eben W., and J. W. Titcomb
A circular pond with central outlet for rearing fry and fingerlings of the Salmonidae. 60:121-123
Cook, A. B. Jr.
Mechanical devices used in Michigan fish culture. 62:179-184

Cook, W. A.
A brief summary of work of the Bureau of Fisheries in the Lake Superior region. 59:56-62
Cooper, Edwin L.
Rate of exploitation of wild eastern brook trout and brown trout populations in the Pigeon River, Otsego county, Michigan. 81.224-235
Returns from planting of legal-sized brook, brown, and rainbow trout in the Pigeon River, Otsego county, Michigan. 82:265-280
Cooper, Gerald P.
Some results of forage fish investigations in Michigan. 65:132-142
Food habits, rate of growth and cannibalism of young largemouth bass in state-operated rearing ponds in Michigan during 1935. 66:242-266
Estimation of fish population in Michigan lakes. 81:4-16
Cooper, Gerald P., and George N. Washburn.
Relation of dissolved oxygen to winter mortality of fish in Michigan lakes. 76:23-33
Cope, Oliver B., and Claude M. Gjullin, and Alf Storm
Effects of some insecticides on trout and salmon in Alaska, with reference to blackfly control. 77:160-177
Croker, Richard S.
How California is measuring the angler's catch. 66:301-305
Three years of fisheries statistics on marine sport fishing in California. 69: 111-118
Croker, Richard S., and G. H. Clark
A method of collecting statistics of marine sport catches in California. 63:332-337
Crowell, Mary F.
A preliminary report upon some irradiation expediments. 60:167-171
Crowell, Mary F., C. M. McCay, John W. Titcomb, Eben W. Cobb
The relative value of plant and animal by-products as feeds for brook trout, and the basic nutritional requirements of brook trout in terms of protein, carbohydrates, vitamins, inorganic elements and roughage. 59:126-145
Crowell, Mary F., C. M. McCay, John W. Titcomb, Eben W. Cobb, and A. Tunison
The nutritional requirements of trout. 60:127-139
Crowell, Mary F., C. M. McCay, D. K. Tressler, S. P. MacDonald, John W. Titcomb, and Eben W. Cobb
The nutritional requirements of trout and chemical composition of the entire trout body. 61:58-80
Crump, S. Lee, J. W. Freese, Lionel Ross, Daniel R. Embody, and Howard A. Schuck
The effect of cresol on brook trout. 70:304-310
Culler, C. F.
Depletion of the aquatic resources of the upper Mississippi river and suggested remedial measures. 60:279-283
Progress in fish culture. 62:114-118
The future of the upper Mississippi fisheries. 64:328-331
Cunningham, A. G.
Remarkable productivity of Lake Dauphin. 65:275-276
The preservation of whitefish production in Lake Winnepeg. 65:272-274
Curtis, Brian
The golden trout of Cottonwood Lakes. 64:259-265
Angler's catch records in California. 69:125-131

D

Daly, Russel, Paul H. Eschmeyer, and Leo F. Erkkila
The movement of tagged lake trout in Lake Superior. 82:68-77
Davis, H. S.
Investigations in pond-fish culture at the Fairport Biological station. 59: 86-93
Some principles of bass culture. 60:48-52
The influence of heredity on the spawning season of trout. 61:42-48
The use of dry foods in the diet of trout. 62:189-196
The purpose and value of stream improvement. 64:63-67
Growth and heredity in trout. 64: 197-202
Stream management in the National Forests. 65:234-239
Objectives in trout stream management. 68:76-85
Fish cultural developments during recent years. 68:234-239
Artificial propogation and management of trout waters. 69:158-168
Infectious diseases among wild fishes. 74:21-25
Cytophaga columnaris as a cause of fish epidemic. 77:102-104
Davis, H. S., and Estelle C. Lazar
A new fungus disease of trout. 70: 264-271
Davis, H. S., and R. F. Lord
The use of substitutes for fresh meat in the diet of trout. 59:160-167
Deason, H. J.
Preliminary report on the growth rate, dominance, and maturity of the pike-perches of Lake Erie. 63:348-360
A survey of academic qualifications for fishery biologist and institutional facilities for training fishery biologists. 70:128-142
Deason, H. J., and Ralph Hile
Growth of the whitefish in Trout Lakes, northeastern highlands, Wisconsin. 64:231-237
Distribution, abundance, and spawning season and grounds of the Kiyi, *Leucichthys kiyi*, Koelz, in Lake Michigan. 74:143-165
Age and growth of the kiyi, *Leucichthys kiyi*, Koelz, in Lake Michigan. 74:88-142
Deason, H. J., and John Van Oosten
The food of the lake trout and of the lawyer of Lake Michigan. 67:155-177
Age, growth and feeding habits of the whitefish of Lake Champlain. 68: 152-161
Degan, John George
Studies of the toxicity of the ammunition plant wastes to fishes. 73:45-51
DeLacy, Allan C., and W. Markham Morton
Taxonomy and habits of the charrs,

Salvelinus malma and *Salvelinus alpinus*, of the Karluk drainage system. 72:79-91

Demann, J. G., W. B. Hart, and Roy F. Weston
An apparatus for oxygenating test solutions in which fish are used as test animals for evaluating toxicity. 75: 228-236

Dendy, Jack S.
Predicting depth distribution of fish in three TVA storage-type reservoirs. 75:65-71

Dendy, Jack S., and Earle F. Lyman
A pre-impoundment bottom-fauna study of Cherokee reservoir area (Tennessee). 73:194-208

Denmead, Talbott
The federal black bass law. 61:258-261
Suggested black bass legislation, 1935. 64:97-102

Dequine, John F.
Management of Florida's freshwater fisheries. 78:38-41

Dequine, John F., and Charles E. Hall, Jr.
Results of some tagging studies of the Florida largemouth bass, *Micropterus salmoides floridanus* (LeSueur). 79:155-166

Detwiler, J. D.
Feeding experiments with brook trout fingerlings. 60:146-157

Deuel, Charles R.
A study of the food cost of trout in New York state hatcheries. 64:172-175
The use of fish meals, cottonseed meal, meat meal, salmon egg meal and and dried skim milk in trout diets. 65:161-164

Dinsmore, A. H.
Some things we think we learned at York pond. 62:141-143
Effect of heredity on the growth of brook trout. 64:203-204
Fact vs. Theory. 65:204-206

Domogalla, Bernhard
Eleven years of chemical treatment of the Madison Lakes:—Its effect on fish and fish foods. 65:115-121

Donaldson, Lauren R.
The use of salmon by-products as food for young king salmon. 65:165-171

Donaldson, Lauren R., and Fred J. Foster
A summary table of some experimental tests in feeding young salmon and trout. 67:262-270
Experimental study of the effect of various water temperatures on the growth, food utilization and mortality rates of fingerling sockeye salmon. 70:339-346

Doudoroff, Peter
Food of trout from lakes in the Klamath River Watershed. 65:129-131

Duden, William R., and Ralph Hile
Methods for the investigation of the statistics of the commercial fisheries of the Great Lakes. 63:292-305

Duff, D. C. B.
Furunculosis on the Pacific Coast. 62:249-254

duPlessis, S. S.
A gyrodactyloid parasite from the ureters of largemouth bass at the Jonkershoek Inland Fish Hatchery, South Africa. 75:105-109

Dwyer, J. N.
Hydrographic bottle for fisheries survey. 62:342-343

Dymond, J. R.
A possible critical factor affecting the production of trout in some British Columbia lakes. 60:247-249

E

Earle, Swepson
What Maryland is doing to stock her streams. 60:260-261
The fisheries of Chespeake Bay. 62: 43-49
Fish increase responds to government and state cooperation. 66:392-294

Eddy, Roland E., and Thomas P. Hazard
Modification of the sexual cycle in brook trout (*Salvelinus fontinalis*) by control of light. 80:158-162

Edwards-Wynne, V. C.
The breeding habits of the blackheaded minnow. 62:382-383

Eicher, George J. Jr.
Current trends in state fishery programs. 76:13-22
Localized weed control in management of game fish. 76:177

Einarsen, Arthur S., and Loyd Royal
What shall we feed? 59:268-271

Elder, David, and William M. Lewis
The fish population of the headwaters of a spotted bass stream in southern Illinois. 82:193-202

Elkins, Winston A.
A fish yield study for certain lakes in the Chequamegon National Forest. 66:306-312

Elliott, Oliver R., and Bernard R. Smith
Movement of parasitic-phase sea lampreys in Lakes Huron and Michigan. 82:123-128

Ellis, M. M.
The artificial propogation of freshwater mussels. 59:217-223
Measuring pollution in fresh water streams. 65:240-245
Some fishery problems in impounded waters. 66:63-75
Fresh-water impoundments. 71:80-93

Elsey, C. A., and D. S. Rawson
Reduction in the longnose sucker population of Pyramid Lake, Alberta, in an attempt to improve angling. 78:13-31

Elson, Paul F.
Rearing maskinonge in a protected area. 70:421-429

Embody, Daniel R.
A method of estimating the number of fish in a given section of a stream. 69:231-236
A method of measuring the number of ecto-parasites infesting hatchery fish with particular application to *Gyrodactylus*. 71:122-130

Embody, Daniel R., H. A. Schuck, S. Lee Crump, J. W. Freese, and Lionel Ross
The effect of cresol on brook trout. 70:304-310

Embody, G. C.
Relation of temperature to the incubation periods of eggs of four species of trout. 64:281-292

Embody, G. C., and Charles O. Hayford

Further progress in the selective breeding of brook trout at the New Jersey State Hatchery. 60:109-113
Embody, G. C., and James Laird
Controlling the trout gill worm. 61:189-192
Embody, G. C., and W. O. Sadler
Propogating *Daphnia* and other forage organisms intensively in small ponds. 64:205-211
Erkkila, Leo F., Paul H. Eschmeyer, and Russell Daly
The movement of tagged lake trout in Lake Superior, 1950-1952. 82:68-77
Eschmeyer, Paul H., George F. Lunger, and Ralph Hile
Status of the lake trout fishery in Lake Superior. 80:278-312
Eschmeyer, Paul H., Russell Daly, and Leo F. Erkkila
The movement of tagged lake trout in Lake Superior, 1950-1952. 82:68-77
Eschmeyer, R. W.
Analysis of the game fish catch in a Michigan lake. 65:207-223
A second season of creel census on Fife Lake. 66:324-334
Experimental management of a group of small Michigan Lakes. 67:120-129
Summary of a 4-year creel census on Fife Lake, Michigan. 68:354-358
The effect of impoundment on fishing intensity in several T.V.A. lakes. 72:103-107
Eschmeyer, R. W., and Albert S. Hazzard
A comparison of summer and winter fishing in Michigan lakes. 66:87-98
Eschmeyer, R. W., Carl L. Hubbs, and Clarence M. Tarzwell
C.C.C. stream improvement work in Michigan. 63:404-416
Everhart, W. Harry, and William W. Hassler
Aquarium studies on the toxicity of DDT to brown trout, *Salmo trutta*. 75: 59-64
Ewers, Lela A.
Summary report of crustacea used as food by the fishes of the western end of Lake Erie. 63:379-390
Ewers, Lela A., and M. W. Boesel
The food of some Buckeye Lake fishes. 65:57-70

F

Faigenbaum, Harold M.
Some chemical characteristics of Adirondack lakes and ponds. 64:189-196
Faigenbaum, H. M., F. R. Nevin, H. K. Townes, J. R. Greeley, C. W. Greene, and Emmeline Moore
A problem in trout stream management. 64:68-80
Faubion, H. E., J. G. Burr, and A. H. Wiebe
The problem of stream pollution in Texas with special reference to salt water from the oil fields. 64:81-86
Fellers, Carl R.
Research in food technology in the development of our fishery resources. 70:72-76
Fellers, Carl R., and M. M. Cleveland
Comparison of laboratory and practical tests for determining the nutritive value of fish meals. 64:293-303
Fellers, Carl R., and Vernon K. Watson
Nutritive value of the blue crab and the sand crab. 65:342-349
Fellers, Carl R., J. A. Clague, and D. A. Bean
Composition and utilization of the atlantic whiting. 66:415-422
Fentress, E. W., E. O. Rodgers, C. M. McCay, A. V. Tunison, and E. O. Phillips
Certain physical and chemical characteristics of the lake, loch leven, rainbow, and brook trout. 68:316-321
Fiedler, R. H.
The factory ship—Its significance to our world trade and commerce. 66:427-441
Fiedler, R. H., and V. J. Samson
Survey of fish hatchery foods and feeding practices. 65:376-402
Field, George W.
Present and future wastage of oil and water, effects and remedies. 60: 284-285
Biology as the panacea for some national problems. 62:369-376
Fish, Frederick F.
The chemical disinfection of trout ponds. 63:158-163
Ulcer disease of trout. 64:252-258
A western type of bacterial gill disease. 65:85-87
Notes on Myxosporidian parasites in black bass (*Huro floridana*). 68:173-177
Simplified methods for the prolonged treatment of fish diseases. 68:178-787
An evaluation of trout culture. 69: 85-89
Notes on *Costia necatrix*. 70:441-445
The anaesthesia of fish by high carbon dioxide concentrations. 72:25-29
A technique for controlling infectious disease in hatchery fish. 74:209-222
Fish, Frederic F., and Roger E. Burrows
Experiments upon the control of trichodiniasis of salmonid fishes by prolonged circulation of formalin solution. 69:94-100
Fish, Frederick F., and Robert R. Rucker
Columnaris as a disease of cold-water fishes. 73:32-36
Flakas, Kenneth G.
Sulfonamide therapy of furunculosis in brown trout. 78:117-127
Fleener, George G.
Life history of the cutthroat trout, Richardson, in Logan River, Utah. 81:235-248
Foerster, R. E.
The reactions of some sockeye salmon to a power dam. 60:244-246
A comparison of the natural and artificial propogation of salmon. 61: 121-130
Artificial food rations for sockeye salmon. 62:228-238
Fry production from eyed-egg planting. 64:379-381
Follett, Richard
Salmo salar of the St. Lawrence River. 62:366-368
Foster, Fred J., and Lauren R. Donaldson
A summary table of some experimental tests in feeding young salmon and trout. 67:262-270
Experimental study of the effect of various water temperatures on the growth, food utilization and mortality rates of fingerling sockeye salmon. 70: 339-346

Fragoso, Francisco Navarro
The situation of the fishing industry in Mexico. 67:256-261
French, C. A.
Pennsylvania's spring creek project. 68:359-363
Freeze, J. W., Lionel Ross, Daniel R. Embody, H. A. Schuck, and S. Lee Crump
The effect of cresol on brook trout. 70:304-310
Friddle, Dorothy D., and Eugene W. Surber
Relative toxicity of suspensions and oil formulations of DDT to native fishes in Back Creek, West Virginia. 76:315-321
Friddle, S. B., and S. F. Snieszko
A contribution to the etiology of ulcer disease of trout. 78:56-63
Tissue levels of various sulfonamides in trout. 80:240-250
Further studies on factors determining tissue levels of sulfamerazine in trout. 81:101-110
Friddle, S. B., S. F. Snieszko, and Phillip J. Griffin
A more comprehensive description of *Bacterium salmonicida*. 82:129-138
Friddle, S. B., S. F. Snieszko, and J. S. Gutsell
Various sulfonamide treatments of furunculosis in brook trout, *Salvelinus fontinalis*. 78:181-188
Frost, Terrence P., Warren H. Jones, and Herbert E. Warfel
The smelt, *Osmerus mordax*, in Great Bay, New Hampshire. 72:257-262
Fry, F. E. J.
The 1944 year class of lake trout in South Bay, Lake Huron. 82:178-192
Fry, F. E. J., and V. B. Chapman
The lake trout fishery of Algonquin park from 1936-1945. 75:19-35
Fuller, Arno C., and A. H. Wiebe
The oxygen consumption of largemouth black bass (*Huro floridanus*) fingerling. 63:208-214
Funk, John L.
Wider application of the electrical method of collecting fish. 77:49-60

G

Gabrielson, Ira N.
A consideration of the Hoover Report. 79:13-17
Gage, Simon Henry
Zymogen granules in the fishes. 72:263-266
Gaufin, Arden R., and Max Katz
The effects of sewage pollution on the fish population of a midwestern stream. 82:156-165
Gerking, Shelby D.
Vital statistics of the fish population of Gordy Lake, Indiana. 82:48-67
Gjullin, Claude M., Alf Storm and Oliver B. Cope
Effects of some insecticides on trout and salmon in Alaska with reference to blackfly control. 77:160-177
Gordon, Seth
Scientific management—Our future fisheries job. 63:73-79
Gottschalk, John, and William E. Ricker
An experiment in removing coarse fish from a lake. 70:382-390
Gowanloch, James N.
Practical importance of securing more precise statistics of the shrimp fishery. 62:111-113
The importance and conduct of hydrographic studies in Louisiana in relation to commercial fisheries. 62:336-339
Pollution by oil in relation to oysters. 65:293-296
Greeley, John R.
The spawning habits of brook, brown, and rainbow trout, and the problems of egg predators. 62:239-248
The growth rate of rainbow trout from some Michigan waters. 63:361–378
Progress of stream improvement in New York state. 65:316-321
Greeley, John R., C. W. Greene, Emmeline Moore, H. M. Faigenbaum, F. R. Nevin and H. K. Townes
A problem in trout stream management. 64:68-80
Greene, C. Willard
Results from stocking brook trout of wild and hatchery strains at Stillwater pond. 81:43-52
Greene, C. W., Emmeline Moore, J. R. Greeley, H M. Faigenbaum, F. R. Nevin, and H. L. Townes
A problem in trout stream management. 64:68-80
Greenbank, John
Selective poisoning of fish. 70:80-86
Greenbank, John, and D. John O'Donnell
Hydraulic presses for making impressions of fish scales. 78:32-37
Griffin, Phillip J., S. F. Snieszko, and S. B. Friddle
A more comprehensive description of *Bacterium salmonicida*. 82:129-138
Griffiths, Francis P.
Considerations of the introduction and distribution of exotic fishes in Oregon. 69:240-243
Griffiths, Francis P., Willard Jarvis, Andrew B. Smith, and Charles A. Lockwood
Measurement of fish for liberation by weighing. 70:275-281
Griffiths, Francis P., and Maurice E. Stansby
Significance of the bacterial count and chemical tests in determining the relative freshness of haddock. 64:401-407
Griffiths, Francis P., Glaucus Webb, and Phillip W. Schneider
Ether anaesthesia of steelhead trout. 70:272-274
Gross, E. G., D. H. Slaughter, and A. H. Wiebe
The arsenic content of largemouth black bass fingerlings. 61:150-163
Gunter, G., and H. H. Hildebrand
Correlation of rainfall with the Texas catch of white shrimp, *Penaeus setiferus* (Linnaeus). 82:151-155
Gutermuth, C. R.
Club-operated hatcheries—a part of Indiana's state wide plan. 68:118-125
Gutsell, James S.
The value of certain drugs, especially sulfa drugs, in the treatment of furunculosis in brook trout. 75:186-199
Gutsell, James S., and S. F. Snieszko
Dosage of sulfamerazine in the treatment of furunculosis in brook trout. 76:82-96
Response of brook, rainbow, and brown trout to various dosages of sulfamerazine. 77:93-101

Gutsell, James S., S. B. Friddle, and S. F. Snieszko
Various sulfonamide treatment of furunculosis in brook trout, *Salvelinus fontinalis*. 78:181-188

H

Hachey, H. B.
The weather man and coastal fisheries. 64:382-389
The submarine physiography and oceanographical problems of the Scotian shelf. 66:237-241
Hachey, H. B., and A. H. Leim
A transgression of marginal waters over the Scotian shelf. 65:279-283
Hall, Charles E. Jr., and John F. Dequine
Results of some tagging studies of the Florida largemouth bass, *Micropterus salmoides floridanus* (LeSueur). 79:155-166
Hammer, Ralph C., and R. V. Truitt
Control of fishing intensity in Maryland. 71:144-148
Hansen, Donald F.
The date of annual ring formation on the scales of the white crappie. 66:227-235
Hanson, Harry A., Osgood R. Smith, and Paul R. Needham
Salmon salvage problems in relation to Shasta Dam, California and notes on the biology of the Sacramento River salmon. 70:55-69
Harkness, William J. K.
Ontario Fisheries Research Laboratory. 60:178-181
Catches of speckled trout from the plantings of hatchery-raised fish in private waters of Ontario. 70:410-413
Harkness, William J. K., and William E. Ricker
A preliminary study of some trout waters of Ontario. 59:256-267
Harrison, C. W.
Suggested methods of passing fish over high dams. 62:386-388
Harrison, Harry M. Jr., and Reeve M. Bailey
Food habits of the southern channel catfish in the Des Moines River, Iowa. 75:110-138
Harrison, Roger W., and Maurice E. Stansby
The relation of refrigerated lockers to conservation of fishery products. 70:260-263
Hart, J. S.
The availability of smallmouth black bass, *Micropterus dolomieu* Lacepede, in the lakes of Algonquin Park, Ontario, 70:172-179
Hart, John Lawson, and Albert L. Tester
Quantitative studies on Herring spawning. 64:307-312
Hart, W. B., Roy F. Weston, and J. G. Demann
An apparatus for oxygenating test solutions in which fish are used as test animals for evaluating toxicity. 75:228-236
Haskell, David C.
An electrical method of collecting fish. 69:210-215
An investigation of the use of oxygen in transporting trout. 70:149-160
Haskell, David C., and Robert G. Zilliox
Further developments of the electrical method of collecting fish. 70:404-409
Hasler, Arthur D., and Warren J. Wisby
Use of fish for the olfactory assay of pollutants (phenols) in water. 79:64-70
Hassler, William W., and W. Harry Everhart
Aquarium studies on the Toxicity of DDT to brown trout, *Salmo trutta*. 75:59-64
Hatton, S. Ross, and G. H. Clark
Savings gear in the California dragnet fishery. 69:106-110
Hauck, Forrest R.
Some harmful effects of the electric shocker on large rainbow trout. 77:61-64
Hawes, Harry B.
The status of our black bass work. 63:98-102
Hayford, Charles O.
Economic bass culture in trout wintering ponds at Hackettstown State Fish Hatchery, 62:167-170
Fish cultural notes on trout raising in New Jersey state fish hatchery. 62:126-132
Production of largemouth bass, 63:164-166
Hayford, Charles O., and George C. Embody
Further progress in the selective breeding of brook trout at the New Jersey state hatchery. 60:109-113
Hazard, Thomas P., and Roland E. Eddy
Modification of the sexual cycle in brook trout (*Salvelinus fontinalis*) by control of light. 80:158-162
Hazzard, A. S.
Some phases of the life history of the eastern brook trout, *Salvelinus fontinalis* Mitchell. 62:344-350
A preliminary study of an exceptionally productive trout water, Fish Lake, Utah. 65:122-128
Hazzard, Albert S., Helen A. Baeder, and Peter I. Tack
A comparison of the palatability of hatchery reared and wild brook trout. 75:181-185
Hazzard, Albert S., and R. W. Eschmeyer
A comparison of summer and winter fishing in Michigan lakes. 66:87-97
Hazzard, Albert S., and M. J. Madsen
Studies on the food of the cutthroat trout. 63:198-207
Hazzard, Albert S., and David S. Shetter
Results from experimental plantings of legal-sized brook and rainbow trout. 68:196-210
Species composition by age groups and stability of fish populations in sections of three Michigan trout streams during the summer of 1937. 68:281-302
Results from plantings of marked trout of legal size in streams and lakes of Michigan. 70:446-468
Heacox, Cecil
Fin regeneration in brown trout. 72:231-232
Heard, R. D. H.
Investigations on the nutrition of speckled trout. 60:140-145
Herman, Elmer F., Alfred F. Bartsch, and Kenneth M. Mackenthun
A heavy mortality of fishes resulting from the decomposition of algae in the Yahara River, Wisconsin. 75:175-180
Herrington, William C.
Conservation of immature fish in otter trawling. 62:57-63

Herrington, William C., and George A. Rounsefell
Restoration of the atlantic salmon in New England. 70:123-127
Hesen, Herman O.
A trap for the capture of largemouthed bass fry and fingerlings. 59:118-125
Hewitt, Edward R.
Identification of Factor H in the nutrition of trout, 66:291-297
Hewitt, George S., and Arthur M. Phillips, Jr.
Evaluation of the salmon flesh and salmon viscera in the diet of chinook salmon fingerlings. 73:63-69
Hey, D.
The fertility of brown trout eggs at the Jonkershoek inland fish hatchery. 77:65-80
Hiatt, Robert W.
Food chains and food cycle in Hawaiian fish ponds—Part I. The food and feeding habits of Mullet (*Mugil cephalus*), Milkfish, (*Chanos chanos*), and the Ten-Pounder (*Elops machnata*). 74:250-261
Food chains and food cycle in Hawaiian fish ponds—Part II. Biotic interaction. 74:262-280
Higgins, Elmer
Can the fisheries supply more food during a national emergency? 71:61-73
Radioactive wastes and their significance in stream ecology. 79:217-232
Hildebrand, H. H., and G. Gunter
Correlation of rainfall with the Texas catch of white shrimp, *Penaeus setiferus* (Linnaeus). 82:151-155
Hile, Ralph
The increase in the abundance of the yellow pikeperch in Lakes Huron and Michigan in relation to the artificial propagation of the species. 66:143-159
Growth of the rock bass, *Ambloplites rupestris* (Rafinesque) in five lakes of north-eastern Wisconsin. 71:131-143
Standardization of methods of expressing lengths and weights of fish. 75:157-164
Trends in the lake trout fishery of Lake Huron through 1946. 76:121-147
A nomograph for the computation of the growth of fish from scale measurements. 78:156-162
Hile, Ralph, and Hilary J. Deason
Growth of the whitefish in Trout lakes, northeastern highlands, Wisconsin. 64:231-237
Age and growth of the Kiyi, *Leucichthys kiyi* Koelz, in Lake Michigan. 74:88-142
Distribution, Abundance and spawning season and grounds of the kiyi, *Leucichthys kiyi*, Koelz, in Lake Michigan. 74:143-165
Hile, Ralph, and William R. Duden
Methods for the investigation of the statistics of the commercial fisheries of the Great Lakes. 63:292-305
Hile, Ralph, Paul H. Eschmeyer, and George F. Lunger
Status of the lake trout fishery in Lake Superior. 80:278-312
Hile, Ralph, and Frank W. Jobes
Age, growth and production of the yellow perch, *Perca flavescens* (Mitchill) of Saginaw Bay. 70:102-122
Hile, Ralph, and John Van Oosten
Age and growth of the lake whitefish in Lake Erie. 77:178-249
Hiner, Laurence, Raymond E. Johnson, and Lloyd L. Smith, Jr.
Fish population in some Minnesota trout streams. 76:204-214
Hoffman, Clarence H., and Eugene W. Surber
Effects of an aerial application of wettable DDT on fish and fish-food organisms in Back Creek, West Virginia. 75:48-58
Hoffman, Henry J.
Inspection of fish by the state of Minnesota. 70:483-485
Hoffnagle, G. W.
The taking care of lake trout eggs. 59:53-55
Hogan, Joe
Experiments with commercial fertilizers in rearing largemouth black bass fingerlings. 63:110-120
Rearing largemouth black bass at Lonoke. 64:127-131
The effects of high vacuum on fish. 70: 469-474
The control of aquatic plants with fertilizer in rearing ponds at the Lonoke hatchery, Arkansas. 76:183-189
Holloway, Ancil and Willis King
Management of trout waters in the national forests of the southern appalachians. 81:53-62
Holloway, R. C.
Lake management studies in Oregon. 77:105-113
Hooper, Frank F., Robert C. Ball, and Howard A. Tanner
An experiment in the artificial circulation of a small Michigan lake. 82: 222-24
Hoover, Earl E., and M. S. Johnson
Migration and depletion of stocked brook trout. 67:224-227
Howell, Henry H.
Bottom organisms in fertilized and unfertilized fish ponds in Alabama. 71: 165-179
Howland, Joe W.
Studies on the Kentucky black bass. 61:89-94
Experiments in the propogation of spotted black bass. 62:185-188
Hubbs, Carl L.
Fishery research in Michigan. 60:182-186
The species of black bass. 61:86-88
Some experiences and suggestions on forage fish culture. 63:53-63
Fish Management—Looking forward. 66:51-55
Hubbs, Carl L., and T. E. B. Pope
The spread of the sea lamprey through the Great Lakes. 66:172-176
Hubbs, Carl L., Clarence M. Tarzwell, and R. W. Eschmeyer
C. C. C. stream improvement work in Michigan. 63:404-416
Hubbs, Carl L., and Milton B. Trautman
When do pike shed their teeth? 65: 261-266
The need for investigating fish conditions in winter. 65:51-56
Hunt, Burton P.
Food relationships between Florida spotted gar and other organisms in the Tamiami Canal, Dade county, Florida. 82:13-33
Hunt, Burton P., and William F. Carbine
Food of young pike, *Esox lucius* L., and associated fish in Peterson's

ditches, Houghton Lake, Michigan. 80: 67-83
Hunt, Burton P., and James W. Moffett
Winter feeding habits of bluegills, *Lepomis macrochirus* Rafinesque, and yellow perch, *Perca flavescens*, (Mitchill) in Cedar Lake, Washtenaw county, Michigan. 73:231-242
Hunter, George W. III, and J. Stewart Rankin, Jr.
Parasites of northern pike and pickerel. 69:268-272
Huntsman, A. G.
Attack on the fishery problem, 60: 172-177
Factors influencing return of salmon from the sea. 64:351-355
The problem of control in aquiculture. 64:364-367
The sucker in relation to salmon and trout. 65:152-156
Fish Culture—Past and future. 67: 87-93
Freshets and fish. 75:257-266
Hutson, Don, and William H. Thompson
A ten-year creel census on Lake Pawhuska, Oklahoma. 80:11-27
Hyde, Doris M., and David L. Belding
Notes on the ocean feeding grounds of the atlantic salmon. 62:304-306

I

Idyll, Clarence P. and John W. Sutton
Results of the first year's tagging of mullett, *Mugil cephalus* L., on the west coast of Florida. 81:69-71
Iyengar, H. D. R.
The fisheries of India—present status and proposed development. 78:91-95

J

Jackson, C. F.
Experiments on the value of wood yeast, *Torula utilis*, as an aquatic fertilizer. 79:105-111
James, M. C.
Spawning reactions of smallmouthed bass. 60:62-63
Effects of 1934 drought on fish life. 64:57-62
Glenn C. Leach—1872-1942. 72:21-24
Jarvis, Willard, Andrew B. Smith, Charles A. Lockwood, and Francis P. Griffiths
Measurement of fish for liberation by weighing. 70:275-281
Jewell, Minna E., Edward Schneberger, and Jean Alexander Ross
The vitamin requirements of goldfish and channel cat. 63:338-347
Jobes, Frank W.
The age, growth and bathymethric distribution of Reighard's chub, *Leucichthys Reighardi* Koelz, in Lake Michigan. 72:108-135
The age, growth and distribution of the longjaw cisco in Lake Michigan. 76:215-247
Jobes, Frank W., and Ralph Hile
Age, growth and production of the yellow perch, *Perca flavescens* (Mitchill) of Saginaw Bay. 70:102-122
Joeris, Leonard S.
Technique for the application of a streamer-type fish tag. 82:42-47
Johnson, M. S.
Some observations on chironomid larvae and their usefulness as fish food. 59:153-159
Johnson, M. S., and Earl E. Hoover
Migration and depletion of stocked brook trout. 67:224-227
Johnson, Raymond E., Lloyd Smith Jr., and Laurence E. Hiner
Fish populations in some Minnesota trout streams. 75:204-214
Johnston, Herbert
Can blood suckers affect the fish population of a lake? 64:363
Jones, Alden M.
The length of the growing season of largemouth and smallmouth black bass in Norris Reservoir. 70:183-187
Jones, Warren H., Terrence P. Frost, and Herbert E. Warfel
The smelt, *Osmerus mordax*, in Great Bay, New Hampshire. 72:257-262

K

Kamp, Gertrude C., and C. J. D. Brown
Gonad measurement and egg counts on brown trout (*Salmo trutta*) from the Madison river, Montana. 71:195-200
Kask, John Lawrence, and George A. Rounsefell
How to mark fish. 73:320-363
Kathrein, Joseph W.
Growth rate of four species of fish in a section of the Missouri River between Holter Dam and Cascade, Montana. 80:93-98
Katz, Max
The fecundity of herring from various parts of the north pacific. 75:72-76
The number of erythrocytes in the blood of the silver salmon. 80:184-193
Katz, Max, and Arden R. Gaufin
The effects of sewage pollution on the fish population of a midwestern stream. 82:156-165
Katz, Max, Willis Van Horn, and J. B. Anderson
The effects of kraft pulp mill wastes on some aquatic organisms. 79:55-63
Keil, W. M., and Margaret L. Stevens
Furunculosis investigations. 61:193-198
Kennedy, W. A.
The migration of fish from a shallow to a deep lake in spring and early summer. 70:391-396
The determination of optimum size of mesh for gill nets in Lake Manitoba. 79:167-179
Kenney, Raymond J.
Combatting the starfish menace on Massachusetts shellfish grounds. 62: 76-79
Ketchen, K. S.
Stratified subsampling for determining age distribution. 79:205-212
King, Willis
A program for the management of fish resources in Great Smoky Mountain National Park. 68:86-95
Lake Management studies in the Sandhills Wildlife Management Park. 72:204-211
King, Willis, and Ancil Holloway
Management of trout waters in the national forests of the southern appalachians. 81:53-62
Kingsbury, Oliver R.
The new bass hatchery at South Otselic, New York, and its first year's operation. 64:132-142
Foes encountered in the rearing of smallmouth bass. 66:267-274

Production statistics and costs in relation to fish hatcheries. 80:148-153
Kingsbury, Oliver R., and William F. Royce
Propogation of smallmouth bass in troughs at South Otselic bass Hatchery. 65:309-312
Kingsbury, Oliver R., and Howard A. Schuck
Survival and growth of fingerling brown trout, reared under different hatchery conditions and planted in fast and slow water. 75:147-156
Kitson, J. Arthur, and David L. Belding
Spring-run and fall-run atlantic salmon. 64:225-231
Klak, George E.
Neascus infestation of blackhead, bluntnosed, and other forage minnows. 69:273-278
The condition of brook trout and rainbow trout from four eastern streams. 70:282-289
Knapp, Frank T.
Menhaden utilization in relation to the conservation of food and game fishes of the Texas gulf coast. 79:137-144
Koster, William J.
The food of sculpins in central New York. 66:374-382
Krefting, Laurits W., Lloyd L. Smith, Jr., and Robert L. Butler
Movements of marked walleyes, *Stizostedion vitreum vitreum* (Mitchill) in the fishery of the Red Lakes, Minnesota. 81:179-196
Krumholz, Louis A.
Rates of survival and growth of bluegill yolk fry stocked at different intensities in hatchery ponds. 76:190-203
Length-weight relationship of the Muskellunge in Lake St. Clair. 77:42-48
Further observations on the use of hybrid sunfish in stocking small ponds. 79:112-124
Kuehn, Jerome H., Charles R. Burrows, and John B. Moyle
Fish-population and catch data from Minnesota lakes. 78:163-175
Kuhne, Eugene R.
Tennessee's fisheries program. 68: 240-245

L

Laakso, Martin
Food habits of the yellowstone whitefish, *Prosopium williamsoni cismontanus* (Jordan). 80:99-109
Lachner, Ernest A., and Edward C. Raney
Autumn food of recently planted young brown trout in small streams of central New York. 71:106-111
Lagler, Karl L., and J. Clark Salyer, II
The eastern belted kingfisher in relation to fish management. 76:97-117
Laird, James, and G. C. Embody
Controlling the trout gill worm. 61: 189-192
Langford, R. R.
Fertilization of lakes in Algonquin Park, Ontario. 78:133-144
Langford, R. R., and W. R. Martin
Seasonal variations in stomach contents and rate of growth in a population of yellow perch. 70:436-440
Langlois, T. H.
The problem of efficient management of hatcheries used for the production of pond fishes. 61:106-115
Problems of pondfish culture. 62:156-166
More problems of pond-fish culture. 63:391-403
The social behavior of bass in rearing ponds. 64:146-150
Standard methods of computing bass production. 64:163-166
Notes on the habits of the crayfish, *Cambarus rusticus* Girard, in fish ponds in Ohio. 65:189-193
The need for planned water utilization with aquicultural suggestions. 65: 284-287
Further observations on habits of the crayfish, *Cambarus rusticus* Girard. 66: 275-276
Bass tapeworm infection in a rearing pond. 66:364-365
The Ohio fisheries management program. 67:114-119
Lawrence, W. M.
The effect of temperature on the weight of fasting rainbow trout fingerlings. 70:290-296
Laythe, Leo L.
The fishery development program in the lower Columbia River. 78:42-55
Lazer, Estelle C., and H. S. Davis
A new fungus disease of trout. 70: 264-271
LeCompte, E. Lee
Effect of drought on wildlife. 60:251-252
Leim, A. H., and H. B. Hachey
A transgression of marginal waters over the Scotian shelf. 65:279-283
Leonard, F. A., and J. W. Leonard
An analysis of the feeding habits of rainbow trout and lake trout in Birch Lake, Cass county, Michigan. 76:301-314
Leonard, J. W.
Feeding habits of the Montana grayling in Ford Lake, Michigan. 68:188-195
Notes on the use of derris as a fish poison. 68:269-280
Further observations on the feeding habits of the Montana grayling and bluegill in Ford Lake, Michigan. 69: 244-255
Leonard, J. W., and F. A. Leonard
An analysis of the feeding habits of rainbow trout and lake trout in Birch Lake, Cass county, Michigan. 76:301-314
Leonard, J. W., and David S. Shetter
Studies on Merganser depredations in Michigan trout waters. 66:335-337
A population study of a limited area in a Michigan trout stream, September, 1940. 72:35-51
Lewis, William M., and David Elder
The fish population of the headwaters of a spotted bass stream in southern Illinois. 82:192-202
Lewis, William M., Kenneth D. Carlander, C. E. Ruhr, and Robert E. Cleary
Abundance, growth, and condition of yellow bass, *Morone interrupta* Gill, in Clear Lake, Iowa, 1941-1951. 82:91-103
Lincoln, Guy
Health and growth of trout with relation to wood preservations used in rearing troughs. 60:124-126
Lindner, Milton J.
The commercial marine fishes, crus-

taceans and molluscs of the west coast of Mexico. 74:71-80
Lindner, Milton J., and William W. Anderson
A provisional key to the shrimps of the Family Penaeidae with especial reference to american forms. 73:284-319
Lindner, Milton J., and W. W. Anderson, and Frank W. Weymouth
A summary of the life history of the common shrimp (*Penaeus setiferus*) of the south atlantic and gulf coasts of the United States. 62:108-110
Lindsay, R. C., and B. W. Taylor
Trout lakes in Gaspe county. 64:424-431
Lipschuetz, Morris, and George Edgar Burdick
Toxicity of ferro- and ferricyanide solutions to fish, and determination of the cause of mortality. 78:192-202
Lockwood, Charles A., Andrew B. Smith, Willard Jarvis, and Francis P. Griffiths
Measurement of fish for liberation by weighing. 70:275-281
Lockwood, Kenneth F.
The relation between angler and fish culturist. 59:246-249
Locke, S. B.
A convenient container for fish specimens. 60:250
Developments in the clean streams campaign. 62:355-362
The value of clean streams. 64:87-92
Lord, Russell F.
Rearing a brood stock of blackspotted trout. 60:164-166
Notes on Montana Grayling at the Pittsford, Vermont experimental trout hatchery. 62:171-178
Types of food taken throughout the year by brook trout in a single Vermont stream with a special reference to winter feeding. 63:182-197
Hatchery trout as foragers and game fish. 64:339-345
The 1935 trout harvest from Furnace Brook. Vermonts "test stream." 65:224-233
Lord, R. F., and H. S. Davis
The use of substitutes for fresh meat in the diet of trout. 59:-160-167
Lucas, Clarence R.
Game Fish Management: 68:67-75
How fishery market news information is useful. 70:87-94
Lung, Maurice, William E. Ricker, and Harrell F. Mosbaugh
Production of Indiana Hatcheries in 1942. 73:373-376
Lunger, George F., Ralph Hile, and Paul H. Eschmeyer
Status of the lake trout fishery in Lake Superior. 80:278-312
Lyman, F. Earle
A pre-impoundment bottom fauna study of Watts Bar Reservoir Area (Tennessee). 72:52-62
Lyman, F. Earle, and Jack S. Dendy
A pre-impoundment bottom fauna study of Cherokee Reservoir area (Tennessee). 73:194-208

M

MacDonald, S. P., C. M. McCay, Mary Crowell, A. Tunison, D. K. Tressler, John W. Titcomb, and Eben W. Cobb
The nutritional requirements of trout and chemical composition of the entire trout body. 61:58-80
MacGillivray, Earl, and H. H. MacKay
Recent investigations on the sea lamprey in Ontario. 76:148-159
Maciolek, John A., and P. R. Needham
Ecological effects of winter conditions on trout and trout foods in Convict Creek, California, 1951. 81:202-217
MacKay, H. H.
The present status of fish culture in the Province of Ontario. 60:33-44
Pollution problems in Ontario. 60: 297-305
MacKay, H. H., and Earl MacGillivray
Recent investigations on the sea lamprey in Ontario. 76:148-159
MacKay, H. H., and W. H. R. Werner
Some observations on the culture of Maskinonge. 64:313-317
Mackenthun, Kenneth M., Elmer F. Herman, and Alfred F. Bartsch
A heavy mortality of fishes resulting from the decomposition of algae in the Yahara River, Wisconsin. 75:175-180
Madsen, David H.
Protection of native fishes in the national parks. 66:395-397
Madsen, M. J., and A. S. Hazzard
Studies on the food of the cutthroat trout. 63:198-207
Mane, Andres M.
The Philippine Institute of Fisheries Technology: Its organization and progress. 79:213-216
Manges, Daniel E.
Is there a harvestability differential in fish? 80:46-50
Markham, Morton W., and Allen C. DeLacy
Taxonomy and habits of the chars, *Salvelinus malma* and *Salvelinus alpinus*, of the Karluk drainage system. 72:79-91
Markus, Henry C.
The extent to which temperature changes influence food consumption in largemouth bass. 62:202-210
The progress of the cooperative fish propogation at Rochester and Monroe county, New York. 63:151-153
The effect of tags upon fresh water fishes. 63:319-325
The fate of our forage fish. 64:93-96
Americanized brown trout retain European characteristics. 65:258-260
Marshall, Nelson
The molting without growth of spiny lobsters, *Panulirus argus*, kept in a live car. 75:267-269
Martin, Mayo, and Howard P. Clemens
Effectiveness of rotenone in pond reclamation. 82:166-177
Martin, Nigel V.
A study of the lake trout, *Salvelinus namaycush*, in two Algonquin Park, Ontario, lakes. 81:111-137
Martin, William R.
Rate of growth of the Ling, *Lota lota maculosa*. 70:77-79
Martin, William R., and R. R. Langford
Seasonal variations in stomach contents and rate of growth in a population of yellow perch. 70:436-440
Marston, Alice T.
The effect of temperature upon the injestion of bacteria by the clam (*Mya arenaria*). 60:269
Marzulli, Francis, and O. Lloyd Meehean

The relationship between the production of fish and the carbon and nitrogen contents of fertilized fish ponds. 73:262-273

Massman, William H.
Characteristics of spawning areas of shad, *Alosa sapidissima* (Wilson) in some Virginia streams. 81:78-93

McCay, C. M.
Contributions of the biological survey to progress in the study of fish disease. 59:197

McCay, C. M., John W. Titcomb, Eben W. Cobb, Mary F. Crowell
The relative value of plant and animal by-products as feeds for brook trout and the basic nutritional requirements of brook trout in terms of protein, carbohydrates, vitamins, inorganic elements and roughage. 59:126-145

McCay, C. M., John W. Titcomb, Eben W. Cobb, Mary F. Crowell, and A. Tunison
The nutritional requirements of trout. 60:127-139

McCay, C. M., John W. Titcomb, Eben W. Cobb, Mary F. Crowell, A. Tunison, D. K. Tressler, and S. P. MacDonald
The nutritional requirements of trout and the chemical composition of the entire trout body. 61:58-80

McCay, C. M., and A. V. Tunison
The nutritional requirements of brook trout. 63:167-177
The nutritional requirements of trout. 65:359-375

McCay, C. M., E. W. Fentress, E. O. Rodgers, A. M. Phillips, and A. V. Tunison
Certain physical and chemical characteristics of the lake, loch leven, rainbow and brook trout. 68:316-321

McConnell, William J.
The opercular bone as an indicator of age and growth of the carp, *Cyprinus carpio* Linnaeus. 81:138-149

McCrimmon, Hugh .
The reintroduction of atlantic salmon into tributary streams of Lake Ontario. 78:128-132

McGavock, Alfred M., and A. H. Wiebe
The ability of several species of fish to survive on prolonged exposure to abnormally high concentrations of dissolved oxygen. 62:267-274

McKenzie, R. A.
The reported decrease in fish life and the pollution of the Winnepeg River, Kenora, Ontario. 60:311-323
A new celluloid opercular tag. 78: 114-116

McLain, Alberton L.
Diseases and parasites of the sea lamprey, *Petromyzon marinus*, in the Lake Huron basin. 81:94-100

McLeod, A. W.
Thirty-six years experience in Fish Culture. 60:45-47

McNamara, Fred
Breeding and food habits of the pikes. 66:372-373

Meehean, O. Lloyd
The role of fertilizers in pondfish. 63:103-109
The role of fertilizers in pondfish production—some ecological aspects. 64: 151-154
The dispersal of fertilizing substances in ponds. 65:184-188
Fish populations of five Florida lakes. 71:184-194
Gain in weight per day as a measure of production in fish rearing ponds. 72:220-230

Meehean, O. Lloyd, and Francis Marzulli
The relationship between the production of fish and the carbon and nitrogen of fertilized fish ponds. 73: 262-273

Meehean, O. Lloyd, and E. W. Surber
Lethal concentrations of arsenic for certain aquatic organisms. 61:225-239

Melgs, Robert C., and Clarence F. Pautzke
Studies of the life history of the Puget Sound steelhead trout (*Salmo gairdnerii*). 70:209-220

Mendez, Santiago Rodriquez
The regulation of the fisheries of Mexico. 67:43-45

Menzel, R. Winston
The catfish fishery of Virginia. 73: 364-372

Merrill, Beulah, and David L. Belding
A preliminary report upon a hatchery disease of the salmonidae. 65:76-84

Metzelaar, Jan
The food of the trout in Michigan. 59:146-152

M'Gonigle, R. H.
Some effects of temperature and their relation to fish culture. 62:119-125
Algae, a factor in some hatchery mortalities. 64:416-423
Acute catarrhal enteritis of salmonid fingerlings. 70:297-303

Miller, Donald E.
Michigan Lake Survey—A cooperative enterprise. 66:128-130

Miller, Lawrence F.
A comparison of the hoop-net catches in several fish habitats of Wheeler Reservoir. 73:37-40
Fish harvesting on two TVA mainstream reservoirs. 80:2-10

Miller, Lawrence F., and Charles G. Smith
A comparison of the hoop-net catch on several waters in the Tennessee Valley before and after impoundment. 72: 212-219

Miller, Lawrence F., and Clarence M. Tarzwell
The measurement of fishing intensity on the lower TVA reservoirs. 72:246-256

Miller, Raymond
Our fight for the black bass. 62:363-365

Miller, Richard B.
Observations on mortality rates in fished and unfished cisco populations. 79:180-186
Survival of hatchery-reared cutthroat trout in an Alberta stream. 81: 35-42

Miller, Robert R., and J. R. Alcorn
The introduced fishes of Nevada with a history of their introduction. 73:173-193

Mobley, Ben E.
The culture of channel catfish. 61:171-173

Moen, Tom, and Earl T. Rose
Results of increased fish harvest in Lost Island Lake. 80:50-55
The increase in game-fish populations in East Okoboji Lake, Iowa, following intensive removal of rough fish. 82:104-114

Moffett, James W., and Burton P. Hunt
Winter feeding habits of bluegills, *Lepomis macrochirus* Rafinesque, and yellow perch, *Perca flavescens* (Mitchill) in Cedar Lake, Washtenaw county, Michigan. 73:231-242
Moore, Emmeline
The aeration of hatchery water supplies and the incidence of disease. 59: 195-196
A follow-up program on the impounded waters of the Sacandaga Reservoir. 61:139-142
Certain minnows showing adaptability to conditions in impounded waters. 62:290-291
A creel census at Chataqua lake, New York. 67:130-138
Moore, Emmeline, J. R. Greeley, C. W. Greene, H. M. Faigenbaum, F. R. Nevin, and H. K. Townes
A problem in trout stream management. 64:68-80
Mosbaugh, Harrell, F., William E. Ricker, and Maurice Lung
Production of Indiana hatcheries in 1942. 73:373-376
Mottley, C. McC.
The propogation of trout in the Kamloops district, British Columbia. 62: 144-151
The spawning migration of rainbow trout. 63:80-84
The origin and relations of the rainbow trout. 64:323-327
Objectives in the pond culture of salmonid game fish. 65:172-178
The production of rainbow trout at Paul Lake, British Columbia. 66:187-191
Sampling errors in calculating the weight of fish in ponds. 66:422-426
Loss of weight by rainbow trout by spawning time. 67:207-210
Does the full moon affect rainbow trout fishing? 67:212-214
The effect of increasing the stock in a lake on the size and condition of rainbow trout. 70:414-420
The use of the scales of rainbow trout (*Salmo gairdnerii*) to make direct comparisons of growth. 71:74-79
The statistical analysis of creel-census data. 76:290-300
Mottley, C. McC., J. H. Rainwater, and H. J. Rayner
The determination of the food grade of streams. 68:336-343
Moyle, John B.
Some indices of lake productivity. 76:322-334
Gill nets for sampling fish populations in Minnesota waters. 79:195-204
Moyle, John B., Jerome H. Kuehn, and Charles R. Burrows
Fish-population and catch data from Minnesota lakes. 78:163-175
Moyle, John B., and Lloyd L. Smith, Jr.
Factors influencing production of yellow pikeperch, *Stizostedion vitreum vitreum*, in Minnesota rearing ponds. 73:243-261
Mraz, Donald
Movement of yellow perch marked in southern Green Bay, Lake Michigan, in 1950. 81:150-161

N

Needham, James G.
Mayflies—A staple food of fishes in hill streams. 63:178-181
Needham, Paul R.
Studies on the seasonal food of brook trout. 60:73-88
Quantitative studies of stream bottom foods. 64:238-247
A cheap, adjustable fish grader. 65: 313-315
Notes on the introduction of *Salmo nelsoni* Evermann into California from Mexico. 67:139-146
Quantitative and qualitative observations on fish foods in Waddell Creek lagoon. 69:178-186
Survival of trout in streams. 77:26-31
Needham, Paul R., and L. A. Brown
Notes on the use of water fleas as fish food. 63:131-138
Needham, Paul R., and John A. Maciolek
Ecological effects of winter conditions on trout and trout foods in Convict Creek, California in 1951. 81:202-217
Needham, Paul R., and Daniel W. Slater
Seasonal changes in growth, mortality and condition of rainbow trout following planting. 73:117-124
Needham, Paul R., Osgood R. Smith, and Harry A. Hanson
Salmon salvage problems in relation to Shasta Dam. California and notes on the biology of the Sacramenta River salmon. 70:55-69
Needham, Paul R., and Frank K. Sumner
Fish management problems of high western lakes, with returns from marked trout planted in Upper Angora Lake, California. 71:249-269
Needham, Paul R., and A. C. Taft
Observations on the spawning of steelhead trout. 64:332-338
Neess, John C.
Development and status of pond fertilization in central Europe. 76:335-358
Nesbit, Robert A.
A new method of marking fish by means of internal tags. 63:306-307
Nevin, F. R., H. K. Townes, H. M. Faigenbaum, J. R. Greeley, C. W. Greene, and Emmeline Moore
A problem in trout stream management. 64:68-80
Nurnberger, Patience Kidd
Plant and animal association in a lake. 59:174-177
The plant and animal food of fishes of Big Sandy Lake. 60:253-259
Observations on the spawning temperature of *Luxilus cornutis*. 61:215

O

Odell, Theodore T.
The depth distribution of certain species of fish in some lakes of New York. 62:331-335
The life history and ecological relationships of the alewife [*Pomolobus pseudoharengus* (Wilson)] in Seneca Lake, New York. 64:118-126

O'Donnell, D. John
The fish population in three small lakes in southern Wisconsin. 72:187-196
A case of ossification of the spinal column. 73:41-44
Control of *Hydrodictyon reticulatum* in small ponds. 73:59-62
The disinfection and maintenance of trout hatcheries for the control of disease with a special reference to furunculosis. 74:26-34
O'Donnell, D. John, and John Greenbank
Hydraulic presses for making impressions of fish scales. 78:32-37
Olson, Theodore A.
Some observations on the interrelationships of sunlight, aquatic plant life and fishes. 62:278-289
Olson, Theodore A., and Thaddeus Surber
Some observations on Minnesota fish ponds. 66:104-127
O'Malley, Henry
The American Fisheries Society and the Fisheries Society and the Fisheries. 62:351-354
Osburn, Raymond C.
Some important principles of fish conservation. 63:91-97

P

Parnell, I. W.
Fish parasites and their importance. 64:390-400
Patriarche, Mercer H.
The fishery in Lake Wappapello, a flood-control reservoir on the St. Francis River, Missouri. 82:242-254
Patterson, Donald L.
The walleye population in Escanaba Lake, Vilas county, Wisconsin. 82:34-41
Pautzke, Clarence F.
Studies on the effect of coal washings on steelhead and cutthroat. 67:232-233
Pautzke, Clarence F., and Robert C. Meigs
Studies on the life history of the Puget Sound steelhead trout (*Salmo gairdnerii*). 70:209-220
Pelton, John Z.
Three years of liberalized fishing at Lake Alma, Ohio. 78:64-69
Pender, Mildred J., James A. Rodd, and David L. Belding
The early growth of salmon parr in Canadian hatcheries. 62:211-223
Pentland, Ernest S.
Controlling factors in the distribution of *Gammarus*. 60:89-94
Phillips, Arthur M. Jr.
The physiological effect of sodium chloride upon brook trout. 74:297-309
The vitamin B requirement of trout. 76:34-45
Phillips, Arthur M. Jr., and Donald R. Brockway
The niacin and biotin requirements of trout. 77:152-159
Phillips, Arthur M., Jr., and George S. Hewitt
Evaluation of salmon flesh and salmon viscera in the diet of chinook salmon fingerlings. 73:63-69
Phillips, Arthur M., Jr., and A. V. Tunison
The riboflavin and pantothenic acid requirement of brook trout. 74:81-87
Phillips, E. O., A. V. Tunison, C. M. McCay, E. W. Fentress, and E. O. Rodgers
Certain physical and chemical characteristics of the lake, loch leven, rainbow, and brook trout. 68:316-321
Phillips, J. T. (Mrs.)
Plankton distribution in Manitou and Brome Lakes. 64:461-463
Piche, Lucien, and Gustave Prevost
Observations of the respiration of trout fingerlings and a new method of transporting speckled trout. 68:344-353
Pope, T. E. B., and Carl L. Hubbs
The spread of the sea lamprey through the Great Lakes. 66:172-176
Powell, A. M.
Maryland's activities in raising trout and bass. 61:80-82
Powers, Edwin B.
Factors involved in the sudden mortality of fishes. 67:271-281
Prather, E. E.
Efficiency of food conversion by young largemouth bass *Micropterus salmoides* (Lacepede). 80:154-157
Pratt, Virgil S.
A measure of the efficiency of alternating and direct current fish shockers. 81:63-68
Prevost, Gustave
A criticism of the use of potassium permanganate in fish culture. 64:304-306
A new method and appartus for the accurate and rapid counting of fry and fingerlings. 64:270-273
Experimental stocking of speckled trout from the air. 65:277-278
New adaptation of fish grader. 68:170-172
A method of increasing the capacity of a trout hatchery. 70:430-435
Prevost, Gustave, and Lucien Piche
Observations on the respiration of trout fingerlings and a new method of transporting speckled trout. 68:344-353
Pritchard, Andrew L.
Relation of tagging programs to the conservation of pacific salmon off the coast of British Columbia. 62:88-93
A study of the natural propogation of the pink salmon in British Columbia. 69:237-239
Prytherch, Herbert F.
Scientific methods of oyster farming. 62:72-75
Pujana, Agustin
The undeveloped fisheries resources of Lower California. 67:282-285
Purkett, Charles A., Jr.
Growth rate of trout in relation to elevation and temperature. 80:251-259

R

Radcliffe, Lewis
Status of the Great Lakes fisheries. 59:45-52
Propogation of minnows. 61:131-138
Water farming as exemplified by the oyster industry. 63:154-157
Sponge farming a necessity. 67:46-51
Radebaugh, Gus H., and H. P. K. Agersborg
The economic value of treated sewage effluent in wildlife conservation with special reference to fish and waterfowl. 64:443-456
Rainwater, J. H., H. J. Rayner, and C. McC. Mottley
The determination of the food grade of streams. 68:336-343

Raney, Edward C.
Propogation of the silvery minnow (*Hybognathus nuchalis regius* Girard) in ponds. 71:215-227
Raney, Edward C., and Ernest A. Lachner
Autumn food of recently planted young brown trout in small streams of central New York. 71:106-111
Raney, Edward C., and Dwight A. Webster
The food and growth of the young of the common bullhead in Cayuga Lake, New York. 69:204-209
Rankins, J. Stewart, Jr., and George W. Hunter, III
Parasites of northern pike and pickerel. 69:268-272
Rawson, Donald S.
The pike of Waskesiu Lake, Saskatchewan. 62:323-330
Natural rearing enclosures for smallmouth black bass. 67:96-104
The eastern brook trout in the Maligne River system, Jasper National park. 70:221-235
The experimental introduction of smallmouth black bass into lakes of the Prince Albert National park, Saskatchewan. 73:19-31
The failure of rainbow trout and initial success with the introduction of lake trout in Clear Lake, Riding Mountain Park, Manitoba. 75:323-335
Estimating the fish production of Great Slave Lake. 77:81-92
Rawson, Donald S., and C. A. Elsey
Reduction in the longnose sucker population of Pyramid Lake, Alberta, in an attempt to improve angling. 78: 13-31
Rayner, H. J.
The spawning migration of rainbow trout at Skaneateles Lake, New York. 71:180-183
Rayner, H. J., C. McC. Mottley, and J. H. Rainwater
The determination of the food grade of streams. 68:336-343
Rayner, H. J., Dwight A. Webster, and Lyle M. Thorpe
Population depletion in brook, brown, and rainbow trout stocked in the Blackledge River, Connecticut, 1942. 74:166-187
Regan, C. C.
Floating bass-brood equipment. 64: 143-145
Reid, George K., Jr.
Food of the black crappie, *Pomoxis nigro-maculatus* (LeSueur), in Orange Lake, Florida. 79:145-154
Richardson, L. R.
Observations on the effects of dams on lakes and streams. 64:457-460
A record of *Octomitus salmonis* Moore from Quebec. 65:290-292
Observations on the parasites of the speckled trout in Lake Edward, Quebec. 66:343-356
Observations on trichodinid infection of *Salvelinus*. 67:228-231
The parasites of the fishes of Lake Wakonichi, central northern Quebec. 71: 286-289
Richardson, L. R., and G. W. Belknap
A method of planting *Osmerus mordax* Mitchill on a small scale. 64:432-434
Ricker, William E.
Feeding habits of speckled trout in Ontario waters. 60:64-72
The utility of nets in fresh-water plankton investigations. 62:292-303
Hybrid sunfish for stocking small ponds. 75:84-95
Mortality rates in some little-exploited populations of fresh-water fishes. 77:114-128
Ricker, William E., and John Gottschalk
An experiment in removing coarse fish from a lake. 70:382-390
Ricker, William E., and William J. K. Harkness
A preliminary study of some trout waters of Ontario. 59:256-267
Ricker, William E., Harrell F. Mosbaugh, and Maurice Lung
Production of Indiana Hatcheries in 1942. 73:373-376
Rivero, Luis Howell
The introduced largemouth bass, a predator upon native Cuban fishes. 66: 367-368
Roach, Lee S.
Some physical, chemical, and biological studies of impounded waters in Ohio. 63:265-271
Fourteen years record of fish production from Meander Lake. 79:125-136
Roach, Lee S., and E. L. Wickliff
Relationship of aquatic plants to oxygen supply and their bearing on fish life. 64:370-378
Some studies of impounded waters in Ohio. 66:76-86
Robertson, Alexander
Hatching fry in gravel No. 2. 66: 279-282
Rodd, James A.
Unproductive water areas made productive. 60:116-118
Standard terms and methods of measurement in fish culture. 74:19-20
Rodd, James A., David L. Belding, and Mildred J. Pender
The early growth of salmon parr in Canadian hatcheries. 62:211-223
Rodd, James A., and Charles F. Stapledon
Classification of fish-cultural products and methods of determining the numbers of fish contained in individual allotments. 71:290-293
Rodgers, E. O., E. W. Fentress, C. M. McCay, A. V. Tunison, and E. O. Phillips
Certain physical and chemical characteristics of the lake, loch leven, rainbow and brook trout. 68:316-321
Rosa, Horacio, Jr.
Considerations for an international approach to taxonomy of marine fish. 80:110-118
Rose, Earl T.
The population of yellow pikeperch in Spirit Lake, Iowa. 77:32-41
Rose, Earl T., and Tom Moen
Results of increased fish harvest in Lost Island Lake. 80:50-55
The increase in game-fish populations in East Okoboji Lake, Iowa, following intensive removal of rough fish. 82:104-114
Roseberry, Dean A.
Fishery management of Claytor Lake, an impoundment on the New River, in Virginia. 80:194-209
Ross, Jean Alexander, Edward W. Schneberger, and Minna E. Jewell
The vitamin requirement of goldfish

and channel catfish. 63:338-347
Ross, John H.
The freshwater fishes of Missouri. 61:119-120
Ross, Lionel, Daniel R. Embody, H. A. Schuck, S. Lee Crump, and J. W. Freese
The effect of cresol on brook trout. 70:304-310
Rounsefell, George A.
Field experiments in selecting the most efficient tag for use in haddock studies. 71:228-235
The effect of natural and artificial propogation in maintaining a run of atlantic salmon in Penobscot River. 74: 188-208
Rounsefell, George A., and Lyndon H. Bond
Growth-control charts applied to atlantic salmon. 78:189-191
Rounsefell, George A., and William C. Herrington
Restoration of atlantic salmon in New England. 70:123-127
Rounsefell, George A., and John Lawrence Kask
How to mark fish. 73:320-363
Rounsefell, George A., and Louis D. Stringer
Restoration and management of the New England alewife fisheries with special reference to Maine. 73:394-424
Royal, Loyd, and Arthur S. Einarsen
What shall we feed? 59:268-271
Royce, William F.
Standard length versus total length. 71:270-274
The effect of lamprey attacks upon lake trout in Seneca Lake. New York. 79:71-76
Royce, William F., and O. R. Kingsbury
Propogation of smallmouth bass in troughs at South Otselic bass hatchery. 65:309-312
Rucker, Robert R., and Frederic F. Fish
Columnaris as a disease of cold-water fishes. 73:32-36
Ruhr, C. E., Kenneth D. Carlander, William M. Lewis, and Robert E. Cleary
Abundance, growth, and condition of yellow bass, *Morone interrupta* Gill, in Clear Lake, Iowa, 1941-1951. 82:91-103
Rushton, W.
Freshwater fishery problems of the British Isles. 66:383-392
Russell, Ralph
Fishery cooperative associations in relation to conservation and orderly marketing. 70:188-192

S

Sadler, W. O., and G. C. Embody
Propogating *Daphnia* and other forage organisms intensively in small ponds. 64:205-211
Salyer, J. Clark, II
Predator studies in Michigan waters. 63:229-239
Salyer, J. Clark, II, and Karl F. Lagler
The eastern belted kingfisher in relation to fish management. 76:97-117
Samson, V. J., and R. H. Fiedler
Survey of fish hatchery foods and feeding practices. 65:376-402
Savage, James
Notes on Costiasis. 65:332-333
Copepod infection of speckled trout. 65:334-339
Report on the effect of gravel in raceways. 66:283-286
Schloemer, Clarence L., and William A. Spoor
Diurnal activity of the common sucker and rock bass in Muskellunge Lake. 68:211-220
Schneberger, Edward
The biological and economic importance of the smelt in Green Bay. 66:139-142
Schneberger, Edward, and Lyman O. Williamson
The results of planting legal-sized trout in the Deerskin River, Vilas county, Wisconsin. 72:92-96
Schneberger, Edward, Jean Alexander Ross, and Minna E. Jewell
The vitamin requirements of goldfish and channel catfish. 63:338-347
Schneider, Phillip W., Glaucus Webb, and Francis P. Griffiths
Ether anesthesia of steelhead trout. 70:272-274
Schuck, Howard A.
The effect of population density of legal-sized trout upon the yield per standard fishing effort in a controlled section of stream. 71:236-248
Survival, population density, growth and movement of the wild brown trout in Crystal creek. 73:209-230
Schuck, Howard A., S. Lee Crump, J. W. Freese, Lionel Ross, and D. R. Embody
The effect of cresol on brook trout. 70:304-310
Schuck, Howard A., and O. R. Kingsbury
Survival and growth of fingerling brown trout reared under different hatchery conditions and planted in fast and slow water. 75:147-156
Schultz, Leonard P.
The spawning habits of the chub, *Mylocheilus caurinus*—a forage fish of some value. 65:143-147
Some principles of biological fisheries research. 66:188-192
Scofield, W. L.
Comments on fisheries statistics collected in California. 62:94-99
Scott, Donald C.
Sampling fish populations in the Coosa River, Alabama. 80:29-40
Scott, Little G., and Dwight A. Webster
Angling experiments by the Fly Tyers Club at Cornell University. 74: 63-70
Seale, Alvin
The brine shrimp (*Artemia*) as a satisfactory live food for fishes. 63:129-130
Senning, William C.
The chemistry of impounded waters as a factor in game fish production. 68:303-308
Shapovalov, Leo
A system for recording measurements of fish scales. 74:59-62
Shapovalov, Leo, and William Berrian
An experiment in hatching silver salmon (*Oncorhynchus kisutch*) in gravel. 69:135-140.
Shaw, Paul A.
Pollution control in California. 69: 90-93
Shelubsky, M., and S. Tal
Review of the fish farming in Israel. 81:218-223

Shetter, David S.
Migration, growth rate, and population density of the brook trout in the north branch of the Au Sable River, Michigan. 66:203-210
Further results from spring and fall plantings of legal-sized, hatchery reared trout in streams and lakes of Michigan. 74:35-58
A brief history on the sea lamprey problem in Michigan waters. 76:160-176
Results from plantings of marked fingerling brook trout, *Salvelinus f. fontinalis* (Mitchill) in Hunt Creek, Montmorency county, Michigan. 79:77-93
The effect of fin removal on fingerling lake trout (*Cristivomer namaycush*). 80:260-277
The mortality and growth of marked and unmarked lake trout fingerlings in the presence of predators. 81:17-34
Shetter, David S., and W. F. Carbine
Examples of the use of two-way fish weirs in Michigan. 73:70-89
Shetter, David S., and O. H. Clark
The effect of deflectors in a section of a Michigan trout stream. 76:248-278
Shetter, David S., and Albert S. Hazzard
Species composition by age groups and stability of fish populations in sections of three Michigan trout streams during the summer of 1937. 68:281-302
Results from experimental plantings of legal-sized brook and rainbow trout. 68:196-210
Results from plantings of marked trout of legal size in streams and lakes of Michigan. 70:446-468
Shetter, David S., and J. W. Leonard
Studies on merganser depredations in Michigan trout waters. 66:335-337
A population study of a limited area in a Michigan trout stream, September, 1940. 72:35-51
Shillington, K. G.
Selective breeding of speckled trout. 64:274-276
Shirts, Walter
The propogation of black bass in Indiana. 61:116-118
Shoemaker, Hurst H.
A laboratory study of fish populations 74:350-360
Shoup, C. S.
Geochemical interpretation of water analyses from Tennessee Streams. 74: 223-229
Sigler, William F.
Age and growth of the brown trout, *Salmo trutta fario* Linnaeus, in Logan River, Utah. 81:171-178
Simpson, James C.
Preliminary observations on the egg eating habits of the rosyside sucker. 69:176-177
Simpson, R. W., and G. E. Symons
Report on fish destruction in the Niagara River in 1937. 68:246-255
Slater, Daniel W.
Re-formation of excised fins of king salmon fingerlings and its effect on recognition of marked adults. 77:132-140
Slater, Daniel W., and P. R. Needham
Seasonal changes in growth, mortality and condition of rainbow trout following planting. 73:117-124
Slaughter, D. H., A. H. Wiebe, and E. G. Gross
The arsenic content of largemouth black bass fingerlings. 61:150-163
Smith, Andrew B., Francis P. Griffiths, Willard Jarvis, and Charles A. Lockwood
Measurement of fish for liberation by weighing. 70:275-281
Smith, Beatrice S., and Lloyd L. Smith, Jr.
Survival of seven to ten-inch planted trout in two Minnesota streams. 73: 108-116
Smith, Bernard R., and Oliver R. Elliott
Movement of parasitic-phase sea lampreys in Lakes Huron and Michigan. 82:123-128
Smith, Charles G., and Lawrence F. Miller
A comparison of the hoop-net catch on several waters in the Tennessee Valley before and after impoundment. 72:212-219
Smith, E. V., and H. S. Swingle
The relationship between plankton production and fish production in ponds. 68:309-315
Fertilizers for increasing the natural food for fish in ponds. 68:126-135
Effect of organic and inorganic fertilizers of plankton production and bluegill bream carrying capacity of ponds. 69:257-262
Fish production in terrace-water ponds in Alabama. 69:101-105
Control of spatterdock (*Nuphar advena* Ait) in ponds. 70:363-368
Winter and summer growth of bluegills in fertilized ponds. 70:335-338
The use of fertilizers for controlling several submerged aquatic plants in ponds. 71:94-101
The management of ponds with stunted fish populations. 71:102-105
Percentages of survival of bluegills (*Lepomis macrochirus*) and largemouth black bass (*Huro salmoides*) when planted in new ponds. 72:63-67
Organic materials as fertilizers for fish ponds. 72:97-102
Smith, Lester
Observations on natural versus artificial propogation of commercial species of fish in the Great Lakes Region. 66: 56-62
Smith, Lloyd L., Jr.
The results of planting brook trout of legal length in the Salmon Trout River, northern Michigan. 70:249-259
Cooperative fishery survey of the Upper Mississippi River. 76:279-282
Smith, Lloyd L., Jr., and John Appelget
The determination of age and growth from vertebrae of the channel catfish *Ictalurus lacustris punctatus*. 80:119-139
Smith, Lloyd L., Jr., and Robert Lee Butler
The age and rate of growth of the sheepshead, *Aplodinotus grunniens* Rafinesque, in the upper Mississippi River navigation pools. 79:43-54
Smith, Lloyd L., Jr., Raymond E. Johnson, and Laurence Hiner
Fish populations in some Minnesota trout streams. 76:204-214
Smith, Lloyd L., Jr., Laurits W. Krefting, and Robert L. Butler

Movements of marked walleyes, *Stizostedion vitreum vitreum*. Mitchill, in the fishery of the Red Lakes, Minnesota. 81:179-196
Smith, Lloyd L., Jr., and John B. Moyle
Factors influencing production of yellow pikeperch, *Stizostedion vitreum vitreum*, in Minnesota rearing ponds. 73:243-261
Smith, Lloyd L., Jr., and Beatrice S. Smith
Survival of seven to ten-inch planted trout in two Minnesota streams. 73: 108-116
Smith, M. W.
The fertilization of water in experimental ponds. 62:317-322
The dissolved oxygen content of fertilized water. 64:408-415
A preliminary note on the fish population of Lake Jesse, Nova Scotia. 65: 297-299
The use of copper sulfate for eradicating the predatory fish population of a lake. 65:101-114
Notes on the food of *Daphnia pulex* (DeGeer) in fertilized waters. 66:287-290
A preliminary account of the fish population in certain Nova Scotian lakes. 67:178-183
Copper sulphate and rotenone as fish poison. 69:141-157
Treatment of Potter's Lake, New Brunswick, with rotenone. 70:347-355
Preliminary observations upon the fertilization of Crecy Lake, New Brunswick. 75:165-174
Smith, Oliver H., and John Van Oosten
Tagging experiments with lake trout, Whitefish, and other species of fish from Lake Michigan. 69:63-84
Smith, Osgood R.
The Caledonia shrimp *Dikerogammarus*. 63:120-128
The breeding habits of the stone roller minnow. 65:148-151
A creel census from Dry River, New Hampshire. 66:313-315
Placer mining silt and its relation to salmon and trout on the pacific coast. 69:225-230
Returns from natural spawning of cutthroat trout and eastern brook trout. 74:281-296
Smith, Osgood R., Harry A. Hanson, and P. R. Needham
Salmon salvage problems in relation to Shasta Dam, California and notes on the biology of the Sacramento River salmon. 70:55-69
Sneed, Kermit E.
A method for calculating the growth of channel catfish, *Ictalurus lacustris punctatus*. 80:174-183
Snieszko, S. F., and S. B. Friddle
A contribution to the etiology of ulcer disease of trout. 78:56-63
Tissue levels of various sulfonamides in trout. 80:240-250
Further studies on factors determining tissue levels of sulfamerazine in trout. 81:101-110
Snieszko, S. F., S. B. Friddle, and Phillip J. Griffin
A more comprehensive description of *Bacterium salmonicida*. 82:129-138
Snieszko, S. F., and James S. Gutsell
Dosage of sulfamerazine in the treatment of furunculosis in brook trout. 76:82-96
Response of brook, rainbow and brown trout to various dosages of sulfamerazine. 77:93-101
Snieszko, S. F., James S. Gutsell, and S. B. Friddle
Various sulfonamide treatments of furunculosis in brook trout, *Salvelinus fontinalis*. 78:181-188
Snyder, J. P.
Tagged smallmouth black bass in Lake Ontario, New York. 62:380-381
Spier, J. D. (Miss)
The dominating species of aquatic plants in Brome Lake and Lake Manitou (Province of Quebec). 64:464-468
Spoor, William A., and Clarence L. Schloemer
Diurnal activity of the common sucker and rock bass in Muskellunge Lake. 68:211-220
Sprules, William M.
The effect of a beaver dam on the insect fauna of a trout stream. 70:236-248
Stansby, Maurice E., and Francis P. Griffiths
Significance of the bacterial count and chemical tests in determining the relative freshness of haddock. 64:401-407
Stansby, Maurice E., and Roger W. Harrison
The relation of refrigerated lockers to conservation of fishery products. 70: 260-263
Stapledon, Charles F., and James A. Rodd
Classification of fish-cultural products and methods of determining the numbers of fish contained in individual allotments. 71:290-293
Stefanich, Frank A.
The population and movement of fish in Prickley Pear Creek, Montana. 81:260-274
Stevens, Margaret L., and W. M. Keil
Furunculosis investigations. 61:193-198
Stone, Udell Bennett
Growth, habits, and fecundity of the ciscoes of Irondequoit Bay, New York. 67:234-245
A study of the deep-water cisco fishery of Lake Ontario with particular reference to the bloater, *Leucichthys hoyi* (Gill). 74:230-249
Storm, Alf, Oliver B. Cope, and Claude M. Gjullin
Effects of some insecticides on trout and salmon in Alaska with reference to blackfly control. 77:160-177
Stringer, Louis D., and George A. Rounsefell
Restoration and management of the New England alewife fisheries with special reference to Maine. 73:394-424
Stoudt, Jerome H.
A study of the migration of the walleyed pike in waters of the Chippewa National Forest, Minnesota. 68:164-169
Sumner, Francis H.
The decline of the Pyramid Lake fishery. 69:216-224
Age and growth of the steelhead trout, *Salmo gairdneri* Richardson, caught by sport and commercial fishermen in Tillamook county, Oregon. 75: 77-83

Migration of salmonids in Sand Creek, Oregon. 82:139-150

Sumner, Frank K., and Paul R. Needham
Fish management problems of high western lakes with returns from marked trout planted in Upper Angora Lake, California. 71:249-269

Surber, Eugene W.
The utilization of sloughs in the Upper Mississippi Wildlife and Fish Refuge as fish ponds. 59:106-113
A quantitative method of studying the food of small fishes. 60:159-163
A method of quantitative bottom fauna and facultative plankton study employed in a year's study of slough biology. 60:187-198
Sodium arsenite for controlling submerged vegetation in fish ponds. 61: 143-149
Observations on circular pool management. 63:139-143
A quantitative study of rainbow trout production in one mile of stream. 63:251-256
Effects of carbon dioxide on the development of trout eggs. 65:194-203
Trout feeding experiments with natural food. 65:300-304
Rainbow trout and bottom fauna production in one mile of stream. 66: 193-202
A comparison of four eastern smallmouth bass streams. 68:322-335
Scyphidia micropteri, a new protozoan parasite of largemouth and smallmouth black bass. 69:169-175
A quantitative study of the food of the smallmouth black bass, *Micropterus dolomieu*, in three eastern streams. 70: 311-334
Scyphidia tholiformis, a peritrichous protozoan found on the gills and external surfaces of *Micropterus dolomieu* and *Micropterus salmoides*. 72:197-203
Observations on the natural and artificial propogation of the smallmouth black bass, *Micropterus dolomieu*. 72: 233-245
The effects of various fertilizers on plant growths and their probable influence on the production of smallmouth black pass in hard-water ponds. 73:377-393
Variations in nitrogen content and fish production in smallmouth bass ponds. 74:338-349
Results of varying time ratio of largemouth black bass and bluegills in the stocking of experimental farm ponds. 77:141-151

Surber, Eugene W., and E. L. Aikens
Observations on plantings of fingerling rainbow, brown, and brook trout from circular pools. 62:133-140

Surber, Eugene W., and Dorothy Friddle
Relative toxicity of suspension and oil formulations of DDT to native fishes in Back Creek, West Virginia. 76: 315-321

Surber, Eugene W., and Clarence H. Hoffmann
Effects of an aerial application of wettable DDT on fish and fish food organisms in Back Creek, West Virginia. 75:48-58

Surber, Eugene W., and O. L. Meehean
Lethal concentrations of arsenic for certain aquatic organisms. 61:225-239

Surber, Thaddeus
Fish Culture in Minnesota—Past, Present, and Future. 59:224-233
Fish cultural successes and failures in Minnesota. 61:240-246
Rearing lake trout to maturity. 63: 64-68

Surber, Thaddeus, and Theodore A. Olson
Some observations on Minnesota fish ponds. 66:104-127

Sutton, John W., and Clarence P. Idyll
Results of the first year's tagging of mullett, *Mugil cephalus* L., on the west coast of Florida. 81:69-77

Swingle, H. S.
Experiments with combinations of largemouth black bass, bluegills and minnows in ponds. 76:46-62
Experiments with various rates of stocking bluegills, *Lepomis macrochirus* Rafinesque, and largemouth bass, *Microcpterus salmoides* (Lacepede), in ponds. 80:218-230

Swingle, H. S., and E. V. Smith
Fertilizers for increasing the natural food for fish in ponds. 66:126-135
The relationship between plankton production and fish production in ponds. 68:309-315
Fish production in terrace-water ponds in Alabama. 69:101-105
Effect of organic and inorganic fertilizers on plankton production and bluegill bream carrying capacity of ponds. 69:257-262
Control of spatterdock (*Nuphar advena* Ait) in ponds. 70:363-368
Winter and summer growth of bluegills in fertilized ponds. 70:335-338
The management of ponds with stunted fish populations. 71:102-105
The use of fertilizers for controlling several submerged aquatic plants in ponds. 71:94-101
Organic material as fertilizers for fish ponds. 72:97-102
Percentages of survival of bluegills (*Lepomis macrochirus*) and largemouth black bass (*Huro salmoides*) when planted in new ponds. 72:63-67

Symons, G. E., and R. W. Simpson
Report on fish destruction in the Niagara River in 1937. 68:246-255

T

Tack, Peter I., Albert S. Hazzard, and Helen A. Baeder
A comparison of the palatability of hatchery reared and wild brook trout. 75:181-185

Taft, A. C.
California steelhead experiments. 64: 248-251

Taft, A. C., and P. R. Needham
Observations on the spawning of steelhead trout. 64:332-338

Tal, S., and M. Shelubsky
Review of the fish farming in Israel. 81:218-223

Tanner, Howard A., Frank F. Hooper, and Robert C. Ball
An experiment in the artificial circulation of a small Michigan lake. 82: 222-241

Tarzwell, Clarence M.
Trout stream improvement in Michigan. 61:48-57
Experimental evidence on the value

of trout stream improvement in Michigan. 66:177-187
Factors influencing fish food and fish production in southwestern streams. 67:246-255
Changing the Clinch River into a trout stream. 68:228-233
Fish populations in the backwaters of Wheeler Reservoir and suggestions for their management. 71:201-214
The possibilities of a commercial fishery in the TVA impoundment and its value in solving the sport and rough fish problems. 73:137-157
Tarzwell, Clarence M., R. W. Eschmeyer, and Carl L. Hubbs
C.C.C. stream improvement work in Michigan. 63:404-416
Tarzwell, Clarence M., and Lawrence F. Miller
The measurement of fishing intensity on the Lower T.V.A. reservoirs. 72: 246-256
Taylor, B. W.
Fish culture activities of the Province of Quebec. 62:224-227
A cheap supply of warm water for winter hatching and feeding of speckled trout. 65:340-341
Taylor, B. W., and R. C. Lindsay
Trout lakes in Gaspe county. 64:424-431
Tester, Albert L.
Spawning habits of the small-mouthed black bass in Ontario waters. 60: 53-61
Populations of herring in the coastal waters of British Columbia. 63:286-291
A modified scale projector. 70:98-101
Theoretical yields at various rates of natural and fishing mortality in stabilized fisheries. 82:115-122
Tester, Albert L., and John Lawson Hart
Quantitative studies on herring spawning. 64:307-312
Thompson, David H.
A survey of the fishes of Champaign county, Illinois. 59:250-255
Thompson, Fred A.
Salmonoid fishes in the Argentine Andes. 69:279-284
Thompson, William H., and Don Hutson
A ten-year creel census on Lake Pawhuska, Oklahoma. 80:11-27
Thompson, W. T.
A rival to liver. 59:168-173
Thorpe, Lyle M., H. J. Rayner, and D. A. Webster
Population depletion in brook, brown, and rainbow trout stocked in Blackledge River, Connecticut, 1942. 74:166-187
Tidd, Wilbur M.
Recent infestations of goldfish and carp by the "anchor parasite." 64:176-180
Tilden, Josephine E.
Plant material and Debris: The algal food of fishes. 59:178-187
Tingley, Frank A.
Changes in volumetric measurement of salmon eggs. 71:284-285
Titcomb, John W.
More about the fresh-water shrimp. 60:95-100
Titcomb, John W., Eben W. Cobb, Mary F. Crowell, C. M. McCay
The relative value of plant and animal by-products as feeds for brook trout and the basic nutritional requirements of brook trout in terms of proteins, carbohydrates, vitamins, inorganic elements, and roughage, 59:126-145
Titcomb, John W., Eben W. Cobb, Mary Crowell, A. Tunison, and C. M. McCay
The nutritional requirements of trout. 60:127-139
Titcomb, John W., and Eben W. Cobb
A circular pond with central outlet for rearing fry and fingerlings of the salmonids. 60:121-123
Titcomb, John W., Eben W. Cobb, Mary Crowell, A. Tunison, D. K. Tressler, and S. P. McDonald
The nutritional requirements of trout and chemical composition of the entire trout body. 61:58-80
Townes, H. K., H. M. Faigenbaum, F. R. Nevin, J. R. Greeley, C. W. Greene, and Emmeline Moore
A problem in trout stream management. 64:68-80
Trautman, Milton B.
The practical value of scientific data in stocking policy for Ohio. 62:258-260
The general effects of pollution on Ohio fish life. 63:69-72
Fluctuations in length and number of certain species of fishes over a five year period in Whitmore Lake, Michigan. 70:193-208
Trautman, Milton B., and Carl L. Hubbs
The need for investigating fish conditions in winter. 65:51-56
When do pike shed their teeth? 65: 261-266
Trembley, Gordon L.
Results from plantings of tagged trout in Spring Creek, Pennsylvania. 73:158-172
Tressler, D. K., C. M. McCay, Mary Crowell, A. Tunison, S. P. MacDonald, John W. Titcomb, and Eben W. Cobb
The nutritional requirements of trout and chemical composition of the entire trout body. 61:58-80
Triggs, Charles W.
Relation of the fishery advisory committee to the commercial and sport fisheries. 70:70-71
Truitt, R. V.
Scientific fisheries work in Maryland. 62:50-56
Truitt, R. V., and Ralph G. Hammer
Control of fishing intensity in Maryland. 71:144-148
Truitt, R. V., and V. D. Vladykov
Striped bass investigations in the Chesapeake Bay. 66:225-226
The importance of sport fishing in Maryland. 66:403-405
Truitt, R. V., and David H. Wallace
Progress of the rock and shad research work at the Chesapeake Biological Laboratory. 68:364-368
Tryon, C. A., Jr.
The effect of covering hatchery troughs on the growth of cutthroat trout (*Salmo clarkii*). 72:145-149
Tunison, A. V., Mary F. Crowell, Eben W. Cobb, John Titcomb, and C. M. McCay
The nutritional requirements of trout. 60:127-139
Tunison, A. V., C. M. McCay, Mary Crowell, D. K. Tressler, S. P. MacDonald, John W. Titcomb, and Eben W. Cobb

The nutritional requirements of trout and chemical composition of the entire trout body. 61:58-80

Tunison, A. V., and C. M. McKay
The nutritional requirements of brook trout. 63:167-177
The nutritional requirements of trout. 65:359-375

Tunison, A. V., C. M. McCay, E. W. Fentress, E. O. Rodgers, and E. O. Phillips
Certain physical and chemical characteristics of lake, loch leven, rainbow and brook trout. 60:316-321

Tunison, A. V., and Arthur M. Phillips, Jr.
The riboflavin and Pantothenic acid requirements of brook trout. 74:81-87

V

van der Schalie, Henry
The relationship of the gravid periods of certain mussels in Michigan to the pearl button industry. 66:406-410

Van Horn, Willis M., J. B. Anderson, and Max Katz
The effect of kraft pulp mill wastes on some aquatic organisms. 79:55-63

Van Oosten, John
Some fisheries problems on the Great Lakes. 59:63-85
The disappearance of the Lake Erie Cisco—A preliminary report. 60:204-214
Experiments on the mesh of trapnets and legislation of the commercial fisheries of Lake Erie. 62:100-107
The value of questionnaires in commercial fisheries regulations and surveys. 64:107-117
Logically justified deductions concerning the Great Lakes fisheries exploded by scientific research. 65:71-75
The Great Lakes fisheries, their proper management for sustained yields. 66:131-138
The dispersal of smelt, *Osmerus mordax*, in the Great Lakes region. 66: 160-171
Relationship between the plantings of fry and production of whitefish in Lake Erie. 71:118-121
Mortality of smelt, *Osmerus mordax*, Mitchill, in Lakes Huron and Michigan during the fall and winter of 1942-1943. 74:310-337
Turbidity as a factor in the decline of Great Lakes fishes with special reference to Lake Erie. 75:281-322
A definition of depletion of fish stocks. 76:283-289

Van Oosten, John, and H. J. Deason
The food of the lake trout and of the lawyer in Lake Michigan. 67:155-177
Age, growth, and feeding habits of the whitefish of Lake Champlain. 68: 152-161

Van Oosten, John, and Ralph Hile
Age and growth of the lake whitefish in Lake Erie. 77:178-249

Van Oosten, John, and Oliver H. Smith
Tagging experiments with lake trout, whitefish, and other species of fish from Lake Michigan. 69:63-84

Viosca, Percy, Jr.
Fish culture in Louisiana. 59:207-216
The southern small-mouth black bass. 61:95-105
Principles of bullfrog (*Rana catesbiana*) culture. 61:262-269
Statistics on the productivity of inland waters—the master key to better fish culture. 65:350-358
Phenomenal growth rates of large-mouth black bass in Louisiana waters. 72:68-71
Critical analysis of practices in the management of warm-water fishes with a view to greater food products. 73: 274-283
Growth rates of black basses and crappie in an impoundment of northwestern Louisiana. 82:255-264

Vladykov, V. D., and R. V. Truitt
Striped bass investigations in Chesapeake Bay. 66:225-226
The importance of sport fishing in Maryland. 66:403-405

Vladykov, V. D., and D. H. Wallace
Is the striped bass of Chesapeake Bay a migratory fish. 67:67-86
Remarks on population of the shad along the atlantic coast region. 67:52-66

von Ihering, Rodolpho, and Stillman Wright
Fisheries investigations in northeast Brazil. 65:267-271

W

Wales, Joseph H.
The feeding of trout in California hatcheries. 65:305-308

Wallace, David H.
Sexual development of the croaker, *Micropogon undulatus*, and distribution of the early stages in Chesapeake Bay. 70:475-482

Wallace, David H., and R. V. Truitt
Progress of the rock and shad research work at the Chesapeake Biological laboratory. 68:364-368

Wallace, David H., and V. D. Vladykov
Remarks on population of shad along the atlantic coast region. 67:52-66
Is the striped bass of Chesapeake Bay a migratory fish? 67:67-86

Wallis, Orthello L.
The status of the fish fauna of the Lake Mead National Recreational Area, Arizona-Nevada. 80:84-92

Ward, Fern
Notes on the food and parasites of the mosquitofish. 61:208-214

Warfel, Herbert E., Terrence P. Frost, and Warren H. Jones
The smelt, *Osmerus mordax*, in Great Bay, New Hampshire. 72:257-262

Washburn, George N.
Propogation of the creek chub in ponds with artificial raceways. 75:336-349

Washburn, George N., and Gerald P. Cooper
Relation of dissolved oxygen to winter mortality of fish in Michigan lakes. 76:23-33

Watson, Vernon K., and Carl R. Fellers
Nutritive value of the blue crab and sand crab. 65:342-349

Watt, A. M.
The law of fish and fishing in the province of Quebec. 62:384-385
Webb, Glaucus, Phillips W. Schneider, and Francis P. Griffiths
Ether anaesthesia of steelhead trout. 70:272-274
Webster, B. O.
Propogation of Muskellunge. 59:202-206
A successful fishway. 61:247-257
Webster, Dwight A.
Food progression in young white perch, *Morone americana* (Gmelin), from Bantam Lake, Connecticut. 72:136-144
Relation of temperature to survival and incubation of the eggs of the smallmouth bass. 75:43-47
Webster, Dwight A., and Edward C. Raney
The food and growth of the young of the common bullhead in Cayuga Lake, New York. 69:204-209
Webster, Dwight A., and G. Scott Little
Angling experiments by the Fly Tyers Club at Cornell University. 74:63-70
Webster, Dwight A., Lyle Thorpe, and H. J. Rayner
Population depletion in brook, brown, and rainbow trout stocked in the Blackledge River, Connecticut, 1942. 74:166-187
Werner, W. H. R.
A note on the use of physiological saline as defined herein as an aid in artificial spawning of speckled trout. 64:346-350
Werner, W. H. R., and H. H. MacKay
Some observations on the culture of maskinonge. 64:313-317
Westerman, F. A.
Progress in trout propogation in Michigan. 59:234-237
The deep water trap net and its relation to the Great Lakes Fisheries. 62:64-71
Exploring new fields in fisheries management. 67:105-113
Weston, Roy F., J. G. Demann, and W. B. Hart
An apparatus for oxygenating test solutions in which fish are used as test animals for evaluating toxicity. 75:228-236
Weymouth, Frank W., Milton J. Lindner, and W. W. Anderson
A summary of the life history of the common shrimp (*Penaeus setiferus*) of the south atlantic and gulf coasts of the United States. 62:108-110
White, H. C.
The spawning period of brook trout. 64:356-359
Some facts and theories concerning the atlantic salmon. 64:360-362
White, H. S.
Some observations on the eastern brook trout of Prince Edward Island. 60:101-108
Whiteleather, R. T.
Fishery conservation through education. 76:118-120
Wickliff, E. L.
Fishery research by the Ohio Division of Conservation. 61:199-207
Are newly impounded waters in Ohio suitable for fish life? 62:275-277
The practical value of determining the fertility of whitefish eggs. 63:144-150
A summary of fisheries research. 63:257-264
Returns from fish tagged in Ohio. 63:326-331
Additional returns from fish tagged in Ohio. 67:211
Wickliff, E. L., and Lee S. Roach
Relationship of aquatic plants to oxygen supply and their bearing on fish life. 64:370-378
Some studies of impounded waters in Ohio. 66:76-86
Wicks, Judson L.
Pollution of the Upper Mississippi River. 60:286-296
Wiebe, A. H.
The effect of various fertilizers on plankton production. 59:94-105
Notes on the exposure of young fish to varying concentrations of arsenic. 60:270-278
Notes in the exposure of several species of fish to sudden changes in the hydrogen ion concentration of the water and to an atmosphere of pure oxygen. 61:216-224
Nocturnal depressions in the dissolved oxygen in fish ponds with special reference to an excess of coarse vegetation and of fertilizers (Texas). 64:181-188
The effect of crude oil on freshwater fish. 65:324-331
Wiebe, A. H., E. G. Gross, and D. H. Slaughter
The arsenic content of large-mouth black bass fingerlings. 61:150-163
Wiebe, A. H., and Alfred M. McGavock
The ability of several species of fish to survive on prolonged exposure to abnormally high concentrations of dissolved oxygen. 62:267-274
Wiebe, A. H., and Arno C. Fuller
The oxygen consumption of large-mouth black bass (*Huro floridanus*) fingerlings. 63:208-214
Wiebe, A. H., J. G. Burr, and H. E. Faubion
The problem of stream pollution in Texas with special reference to salt water from the oil fields. 64:81-86
Wilkinson, James T.
Notes on the use of supplements for fresh meat in the propogation of brook, rainbow, and brown trout in Michigan. 68:96-117
Williamson, Lyman O., and Edward Schneberger
The results of planting legal-sized trout in the Deerskin River, Vilas county, Wisconsin. 72:92-96
Wisby, Warren J., and Arthur D. Hasler
Use of fish for the olfactory assay of pollutants (phenols) in water. 79:64-70
Woodbury, Lowell A.
A sudden mortality of fish accompanying a supersaturation of oxygen in Lake Kaubesa, Wisconsin. 71:112-117
Vitamin B_1 deficiency in hatchery reared rainbow trout. 72:30-34
Wolf, Louis E.
The use of potassium permanganate in the control of fish parasites. 65:88-100

An air bladder disease in lake trout fingerlings. 66:359-363
Blood clots in the gills of trout. 66: 369-371
Observations on ulcer disease of trout. 68:136-151
Further observations on ulcer disease of trout. 70:369-381
Wolf, Philip
A trap for the capture of fish and other organisms moving downstream. 80:41-45
A comparison of the administrative basis for fish management of rivers in Scandinavia, Great Britain, and the United States. 81:197-201
Wood, Kenneth G.
The bottom fauna of Louisa and Redrock lakes, Algonquin Park, Ontario. 82:203-212
Wright, Stillman
The effect of moonlight on fishing success in Fish Lake, Utah. 73:52-58
Wright, Stillman, and Wilbur M. Tidd
Summary of limnological investigations in western Lake Erie in 1929 and 1930. 63:271-285
Wright, Stillman, and Rodolpho von Ihering
Fisheries investigations in Northeast Brazil. 65:267-271

Z

Zarbock, William M.
Life history of the Utah sculpin, *Cottus bairdi semiscaber* (Cope) in Logan River, Utah. 81:249-259
Zeller, Howard D.
Nitrogen and phosphorus concentrations in fertilized and unfertilized farm ponds in central Missouri. 82:281-288
Zilliox, Robert G., and David C. Haskell
Further developments of the electrical method of collecting fish. 70:404-409